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SOME FEATURES OF PRESENT DAY DIAGNOSIS

JAMES B. HERRICK, M.D.

CHICAGO

To have been elected president of the Congress of American Physicians and Surgeons is an honor that is highly appreciated and for which sincere thanks are here tendered. The distinguished men who in the fifty years of its existence have held this position almost without exception in their presidential addresses discussed topics concerning which they had first hand knowledge derived from personal experience. In conformity with this wise precedent, I shall speak from the point of view of a clinician whose fifty years as medical practitioner and teacher have been intimately and chiefly concerned with the patient. I shall confine my remarks to one phase only of clinical medicine; viz., diagnosis and some of its present day problems.

THE PROCESS OF DIAGNOSIS

Can anything new be said concerning diagnosis? Have not its principles and its methods been firmly established for centuries? Cannot one predict that for generations to come physicians will still be trying to answer the question "What is the matter with the patient?" by following the time honored procedure of considering the hereditary, environmental and personal history; the story of the present complaint; the physical examination; the reports of laboratory; instrumental and therapeutic tests; the advice of specialists; finally, the assembling of all these facts, their careful analytic and synthetic study, and their summation in a logical conclusion?

Why, then, bring up a subject so trite?

I might plead the necessity of repeating the well known from time to time lest it be forgotten; also the importance of the topic, for the desire to make a correct diagnosis by which the way is prepared for rational treatment is the most compelling motive in the practice of medicine. A more potent reason, however, is that diagnosis today presents problems that are quite different from those of even a decade ago, for diagnosis is not as stable as it is often thought to be. The order of procedure may remain the same but technic changes. Every addition to medical knowledge carries with it the necessity of a revision of the methods of diagnosis. The microscope, bacteriology, x-rays, applied chemistry, endocrinology, these and many other factors have combined to make diagnosis far different from what it was when it was chiefly a matter of scholastic musing, adherence to tradition, and idolatrous veneration of the fathers of medicine. These newer facts in medicine and cognate sciences, facts that aggregate a huge mass, have in some respects rendered diagnosis simpler and more accurate; in other respects, more difficult and more complicated.

At present diagnosis as well as medicine in general is in a good deal of turmoil, with many problems pressing for solution. These will not be solved, though the solution may be helped, by resolutions or pronouncements of medical organizations, reports of special committees or recommendations of foundations of various kinds, no matter how sincere and searching the efforts of any or all of these bodies may be. They will not be solved by the utterance of epigrams like "train for power," "back to Hippocrates," "back to Galen," for, like most wise sayings, these are but partial truths. The answers will not be found by cloistered meditation in the library or by mere sitting in at a pedagogic conference, or by indulging in day dreams in which the ideal and even the idyllic are permitted to becloud reality. Diagnosis is an eminently practical process, concerned with human beings, with pain and bleeding, with germs and fever, with failing function of organs, with threatening death. Theory and science are involved, of course. But diagnosis implies the application of theory and science. As electrical engineering needed an Edison as well as a Faraday, so modern medicine is a debtor to Lister as well as to Pasteur.

The solution will come mainly through evolution, by the process of trial and error based on the experience of general and special practitioners, research workers in ward and laboratory and on the reaction of the public, i. e. the patients themselves—and the patient, let it be noted, is the party whose interests are paramount. All these other agencies that I have mentioned may be helpful though not decisively final. A frank statement of difficulties, with tentative suggestions for remedies, may also be helpful though also indecisive. It is in such a hope that, repeating much that has been said by others as well as by myself, I venture to discuss here some—by no means all—features of modern diagnosis. By speaking often in the first person singular it will be evident, I trust, that I am not presuming to express in this address any but my own opinions.

DANGERS FROM IGNORANCE

A prolific cause of errors in diagnosis is ignorance, varying in degree, of course, on the part of the practitioner. He may be lacking in information because he has no urge to study, has never been taught to study or perhaps lacks the ability to study. He made a mistake in his choice of a profession; the medical school erred in encouraging him or even permitting him to be a physician. He fails to keep abreast of the times by

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reading and by conferences with his colleagues. He loses touch with the laboratory and the morgue. He is either a forceless, inefficient man who, feeling his inferiority, attempts but little and does that poorly or he may be one who, possessing only the little knowledge that is a dangerous thing, becomes a menace because he is blissfully unaware of the meagerness of his knowledge. Where better informed and wiser men would fear to tread, he rushes in with scalpel or harmful drug or half-baked theory, before he knows the real nature of the ailment he has been called to treat.

The threat from this type of doctor who is unaware of his limitations is one of the strongest arguments for intensive work in undergraduate and intern days, e. g. the exhaustive study of a case or a group of cases through ward, laboratory, operating room, perhaps the deadhouse. Or it may be a problem studied in some department, such as pathology or physiology. Such work will inculcate the principle of thoroughness, the importance of reading original articles and monographs and not merely textbooks. By such intensive work the student learns how medical knowledge is acquired and what are its present day deficiencies. He is better able to distinguish between theory and fact; he gets rid of the incubus of unthinking veneration for the printed word. He learns to reason and judge for himself, though the responsibility for training in independent thinking should not fall primarily on the faculty of the medical school but rather on the school of arts and sciences, a point dwelt on in 1900 by H. P. Bowditch in his presidential address before the fifth session of this congress.

This "majoring" in the medical school has been opposed by some who, in their fetish-like worship of the old type of general practitioner, not realizing or ignoring the tremendous changes that have taken place, argue that the student should not be permitted to do any intensive work because it smacks of specialism. To these objectors specialism is anathema. Is it not time that this out-moded attitude be given up?

The principle of majoring should be carried over into the life of practice. Unless this is done, the practitioner goes stale. Concentration on some subject with the accompanying sense of mastery and the resultant zeal for the new is what will save doctors from remaining mere drudges, with no pleasure in their daily grind, with no sense of progress. This is not specialism in the strict sense. It is expertness, superior knowledge and skill. The process is not a narrowing one; on the contrary, it is broadening.

There is another advantage that will come from this intensive study. It will make clear to the doctor that he has not performed his whole duty when he puts the proper caption on a disease. He should know the cause of such disease and the manner in which such cause has operated in the particular case in hand. He should be familiar with the alterations in anatomy and physiology that are involved, should have knowledge of the natural course of the disease, the best way of handling it, the dangers to the patient and to others, the social and economic import of the illness. This implies well directed instruction on the part of the teacher, much observation and wisely utilized clinical experience on the part of the practitioner.

But it is impossible for even the diligent and bright doctor to know all. There is too much of it. He must select certain topics toward the mastery of which his major efforts are directed. The medical school may, perhaps should, offer him the opportunity of choosing from a wealth of courses. It should guide him in selecting what seems most suitable to him as an individual. It should compel him to select what is essential to physicians as a class, that which teaches the broader, fundamental principles and the facts that are necessary for his everyday work as a practitioner and for his future development. All this is no easy task. The problem of what constitutes wise guidance for the undergraduate, postgraduate and graduate student is being given careful, expert consideration by practitioners themselves, by medical schools, by able committees of investigation and by such bodies as the Council on Medical Education and Hospitals of the American Medical Association, which has functioned so long and so well. Much progress has already been made.

It may be added here that many of us who are older magnify the difficulty that the undergraduate or young practitioner has in grasping even a respectable fraction of the huge mass of knowledge that has accumulated in the last fifty years. We recall the struggle we had when, bewildered, we tried to understand the new that was then in the chaos of formation. We forget that many questions which were at that time subjects for argument and investigation are now settled. The tenets of bacteriology are approved, aseptic surgery and midwifery are established practices, the morphologic and chemical examination of the blood, the x-rays are accepted as helpful aids. Students of today have similar though different problems to face, but the difficulty of learning much that we struggled with is not as forbidding as we often think.

NEED FOR HELP

Ideally the doctor should be able by himself to interview and examine his patient, make the instrumental and laboratory tests and reach a decision as to diagnosis. This ideal is rarely realizable, for our doctor, even though a paragon, cannot do these things unaided. How can he best get help? Physicians are already answering this question by methods determined by individual needs, opportunities and experience. One takes an assistant or associate. Another joins colleagues in hiring and supervising a competent technician or he becomes a member of a group or clinic that may include specialists of several types or he avails himself of the services of his hospital, the municipal laboratory or a properly conducted private laboratory.

Yet these plans have certain weak features. The further away the doctor is from the laboratory, the instrument, the consultant and, most important of all, from the patient, the greater is the likelihood of error. The doctor by eliciting the history himself may learn as much from the way a patient answers questions as from the answers themselves. If the doctor sees for himself the x-ray film, the stained blood under the microscope, he has a more nearly correct impression than that conveyed by merely reading the report of the consultant or assistant. Also many instruments and special tests are not as precise as they are sometimes thought to be; the technician is prone to err in interpreting what he sees in the laboratory just as is the doctor when he tries to translate into pathology what he observes at the bedside. And there is a real danger from overspecialization. These topics have, however, been so frequently and so well discussed that to take them up further in this paper would be needless repetition. From the standpoint of diagnosis, nay from that of medical practice in a broader sense, may we not

accept the specialist, the laboratory and some form of group practice as *faits accomplis?* But first the specialist, the laboratory, the group must show by certification or some other test that they are worthy to offer reliable aid to the practitioner.

EXTENT OF THE EXAMINATION

There is another feature of modern diagnosis of minor value, perhaps, that is worth consideration. Not all patients need the thorough going over that they are often given. The family doctor is familiar with the past health history of his patient. His problem is that of the present illness. With a few questions, a snappy physical examination, he recognizes an attack of erysipelas or measles or acute cardiac failure. He may use the thermometer, the blood counter or the rubber glove but he sees no call for the Wassermann test, the x-ray film or the electrocardiogram. He is well aware that everyday symptoms that seem simple may be due to disease that is serious. Headache may mean tumor, rapid pulse may be due to perverted thyroid action, dizziness may come from pernicious anemia, the acute indigestion may mean appendicitis, carcinoma of the bowel or coronary thrombosis. But he feels that many patients with stomach and bowel upsets, for example, and other everyday ailments with no urgency about them are quite properly examined and treated for a time on the basis of a provisional diagnosis. They need not be rushed to the hospital for study of stools, tonsils, teeth, sinuses, blood chemistry and the like. He agrees with Mackenzie that, when one wishes a flat tire fixed, one resents the advice of the garage man that a thorough overhauling of the car is necessary. It is here that there comes into play not alone the knowledge possessed by the physician but also his discriminating good sense and his mental acumen kept sharp by experience. He will realize that, when life may be urgently threatened by waiting, the safety of the patient must incline the decision to immediate action. To be informed is to avoid dangerous errors in practice, said Billroth. Knowledge and above all else wisdom are here at a premium.[1]

I wish to utter a word of caution as to the way in which diagnoses are sometimes made in connection with the periodic examinations or health check-ups that are so popular today. In cases with obscure symptoms that possibly portend evil, each and every form of examination may be indicated. So too there can be no quarrel with the doctor who feels that he can earn an honest dollar if he yields to the demand of his intelligent patient that, regardless of time or expense, a complete examination be made and a detailed opinion be rendered as to the state of health. Yet even here caution is necessary. Some investigations, e. g. bronchoscopies, ureteral catheterizations, exploratory punctures, allergic tests, are not entirely devoid of risk. Nor is it always wise to discuss with an already apprehensive patient symptoms that are trivial and negligible. Anxiety neuroses and phobias are easily aroused. Such mental upsets can be avoided if the doctor understands patients as well as disease and has the ability to convey truthful information in a way that does not terrorize. Fortunately, too, some patients are well poised and not easily disturbed mentally. A woman of 50 asked my opinion of the report of twenty-five pages that had been handed her as the result of a study of her case in a reputable clinic. Fourteen disease conditions had been found and were duly listed. As I finished reading I said "Well, what did you think about it all?" "Doctor," she replied, "if there had been two or three conditions reported it would have scared me stiff. But when I saw fourteen I just laughed." A pretty sensible view to take of some of these reports.

To tell a patient what ails him requires much understanding of human nature and much tact. One should be careful not to alarm unduly or to convey a wrong impression. Emerson has said "It is not the fact that imports but the effect or the impression of the fact on the mind." To tell a patient that he has a leaky heart valve or syphilis or diabetes may be to state a fact. If the effect of this unexplained statement is to convey to the layman that he has a disease that is hopeless, that will progress relentlessly to an early fatal issue when such is not the case, one has by stating a fact conveyed a wrong impression, has told an untruth. One must adapt the statement to the intelligence of the hearer and by explanation and qualification make it convey the truth that is necessary for the proper understanding of the condition and the carrying out of the advice that is to be given.

Many other features of diagnosis that present minor problems might be discussed did time permit and were it profitable to dwell on what would be agreed to without argument. Among these may be mentioned the importance of having no preconceived notion as to what is the matter when one tackles a case of illness. One should go in with an open mind, though one should not keep the mind constantly open. As G. K. Chesterton said, "The object of opening the mind as of opening the mouth is to shut it again on something solid."

Then there is the doctor whom we all know who lets his diagnosis depend too much on his pet symptoms. A peculiar luster to the eye, a tint of the skin or a special brand of cough or of pain and the doctor's mind is, if not already made up, at least strongly prejudiced. There is the bluff doctor who breezes in and with a rough and ready air, after a cursory examination, makes a cocksure diagnosis that may turn out to be correct. His more scholarly and scientific colleague sarcastically comments that this doctor doesn't know enough to hesitate or be in doubt.

One might discuss the diagnosis by exclusion, or the problem presented when two or more diseases are present rather than one, or the importance of revision of a diagnosis. One might consider further than has been done the perils from emphasizing one of the diagnostic procedures at the expense of others. "Doctor," said a patient to me, "I hope you will be different from the many physicians whom I have consulted. I hope you will examine the x-ray films less and me more." There is a good text for a sermon: in examining the films do not overlook the patient.

DANGER OF TOO MUCH KNOWLEDGE

There is one feature concerning which I wish to speak a little more at length. To state it paradoxically, some physicians know too much to be good diagnosticians or safe advisers. They have more knowledge then they can well handle; they are "suffocated beneath

1. The same tendency to advise unnecessary examination is seen in the office work of general practitioners and specialists and in the group or clinic. Examination by x-rays, the electrocardiograph or by the Wassermann or metabolism test would rarely add usable knowledge in the case of a patient with a rheumatic mitral stenosis and a moderate degree of congestive heart failure. On the other hand, a patient with a leaky aortic valve and threatening heart failure may present an entirely different problem. The cause of the lesion—rheumatism, syphilis, arteriosclerosis, hypertension—the possibility of aneurysm or even of an error in diagnosis with a congenital defect or a coarctation of the aorta causing the symptoms may make one or several of these tests imperative. Proper therapy may depend on their results.

a dead weight of erudition." A doctor of this type knows a multitude of facts. But these facts and their arrangement in the doctor's mind resemble the motley collection seen on the medicine shelves of the bathroom. To be of value, facts, whether they are the result of planned research or of accumulated experience, must be seen not in their isolation but in their relation to other facts. President Neilson of Smith College expressed it the other day when he said that "truth lies not in facts but in the relations between facts." The physician or surgeon may lack the ability to distinguish between major and minor symptoms of disease. He fails to realize that there are what might be called the nonessentials of diagnosis. One of these nonessentials held too close to the eye may obscure the central field of vision and the essentials may not be seen. He may be so overconscientious as to be timid, so obsessed by the laudable desire to be thorough that he putters over minutiae and overlooks the obvious. Valuable time may be lost in waiting for the blood count, the icteric index, the electrocardiogram, the x-ray film, and the golden—perhaps the arsenical—opportunity for prompt action slips by, the favorable time for operation, for giving antitoxin, or prescribing bed rest is lost.

There is such a thing as being too particular.[2] We may apply to medicine what Mr. Justice Cardozo said about the law: "There is an accuracy that defeats itself by overemphasis of details." At times this unfortunate stressing of the incidental is a defense reaction, a desire to appear judicially minded and to reach no conclusion until all the evidence is in. Again, following Justice Cardozo, this is an invertebrate habit of mind which thinks it is impartial because it is undecided and which regards the judicial attitude as that which refrains from judging.

To what extent should the doctor seek for these less common or even out of the way signs? How can he assess them at their proper value? Should they be taught to the undergraduate? It is not easy to give a categorical yes or no answer to these questions. As the children say, Why, that depends.

The answer will depend much on the purpose for which the diagnostic study is made. If research is the prime object, phenomena apparently the most trivial may profitably be sought and recorded in minutest detail. No preconceived notion as to their insignificance should exclude their consideration. The results may show they are of great worth. The same is true if the doctor is trying in every way to perfect himself—as he should—as a keen observer and skilled diagnostician. He should learn their value by trial. If, however, the object of the examination is to decide promptly what is the matter with the one particular indvidual who is before him so that this individual may be treated rationally and without delay, many symptoms may be virtually ignored, to be considered only if help is needed to remove a lingering doubt. A too meticulous concern with the finer points of diagnosis may easily lead good clinicians to lose their sense of proportion and perspective.

It would be helpful if symptoms might be classified from pathognomonic or positive—tubercle bacilli in the sputum or urine, crepitus and displacement in fractured bones, shadows like those of gallstones in the film—down to those only rarely present or of lesser value. Extreme caution is here necessary. Even bone crepitus may be simulated by conditions other than fracture; the shadow confidently regarded as due to gallstones may be cast by a calcified gland. And symptoms low down in the scale may at times assume increased importance; for minor symptoms are by no means to be scorned. Take the case of pulmonary tuberculosis: The diagnosis is regarded as certain if the bacillus is found in the sputum. The x-ray film is a second major reliance. No further symptoms are necessary for a positive diagnosis. Yet in cases in which the x-ray revelations are doubtful and in which no tubercle bacilli are found, other symptoms are by no means negligible: cough, rales, emaciation, anemia, fever, rapid pulse. And such symptoms may be of importance from another point of view. They may enable one to estimate the gravity of the illness more definitely than is possible by the x-rays or by the study of the sputum, for the number of bacilli or the extent of the diseased area as revealed by the x-rays do not always declare the seriousness. Such symptoms, therefore, should be discussed before students and considered at the bedside.

An extreme view of this aspect of the nonessentials that I have presented is taken by some who say that undergraduates should not be taught the unusual, the less important or the imperfectly understood in diagnosis. Why, they say, should the practical man at the bedside be concerned with systolic apical murmurs? They generally mean little and are often misinterpreted. Why should he bother about slight variations in blood pressure, poorly understood features of x-ray films? Diagnosis based on fundamentals and essentials is "good enough" for the ordinary doctor.

This extreme view seems to me a mistaken one. As I have said, the dangerous doctor is the mediocre man who is unaware of his own limitations and the pitfalls of practice and does not know the unusual when he meets it. The most reliable man is he who knows the most and knows his own ability and his limitations.

Another reason why one may object to this "good enough for the ordinary doctor" attitude is that, while some symptoms like the apical systolic murmur, to use this as an example, often have no sinister meaning, sometimes they mean much. Because physicians frequently misinterpret is not a valid reason for ignoring the murmur or for discarding the stethoscope and all it stands for. It is rather an indictment of the profession in general for lack of accurate knowledge concerning this murmur. Is it not the duty of the schools and the leaders in medicine themselves to learn more about such things and to teach more efficiently?

The wisdom of the policy of teaching in the undergraduate courses only the essentials of medicine is debatable for another reason. By compulsory education in our public schools all children may be taught to read and to write a legible hand. The standard of the mass is thus raised. But the child so taught does not necessarily become an educated man in the higher sense of that term or an author or even a discriminating judge of good literature. This has been pointed out by an acute observer, Prof. Wilbur Abbott, who shows how popular education may lower the standards of the best writers. For these writers unconsciously or consciously are led to write down to the level of the reading public, now become so enormous in number, with which is the market for their wares. Many of the histories and biographies of the day, best sellers

2. Bichat expressed it when he said there were two perils equally to be feared: that of particularizing too much and that of generalizing too much. The second, he said, leads as well as the first to false results. (Quoted by Bouillaud, Traité de maladies du cœur, p. 254).

by virtue of attractive style and the atmosphere of romance, are yet lacking in the elements that should, and formerly did, mark truthful, scientific history and biography. In a similar manner may not the plan of educating doctors only in the essentials, the three R's of medicine, involve a lowering of the standard for the mass of doctors? May not this in turn drag to a lower level the superior man, the specialist, the investigator?

RESEARCH

Then, what seems to me an unfortunate attitude has been taken by some who say that there should be a sharp line of demarcation between the ordinary practicing physician, whose duty is to do the daily grind of telling what is the matter with and treating the patient, and a higher type of scientific clinician whose function is investigation. Sir Thomas Lewis, who so richly deserves the distinguished medal for his research service to medicine and whose opinion on problems of practice cannot be lightly brushed aside, favors this distinction. The one type of doctor would be concerned with what he calls "curative medicine" ministering to the immediate needs of sick individuals, and the other with progressive medicine or "clinical science." The latter group would search for new facts, the former would simply apply knowledge already known.

I agree with nearly all that Sir Thomas says in his stimulating paper of eight years ago.[3] But it seems to me that there is an implied slur on the aims and abilities of the general practitioner that should not go unchallenged. There are many poor practitioners, one has to admit. But is it fair to judge all practitioners by the poorest, even though they be many? Not all practitioners, not even a majority of them, are of mediocre ability; not all are merely commercial in their aims; not all make their diagnoses by "no process of mental reasoning" but by a sort of glorified intuition derived from their experience as craftsmen in the art of guessing, *ars conjecturalis,* to use the expression of Celsus; not all drop their contact with the laboratory and lose the spirit of research as soon as they are graduated. There can be no objection to the plan of intensive investigation of clinical problems by all-time qualified men in wards entirely under their control. No reproach can be cast on workers in pure laboratory research or in the most refined type of clinical investigation. All power to the small number who are qualified to carry on work of this kind, and richest opportunity! But arbitrarily to put into the class of the inferior the bright, industrious, well informed practitioner, specialist or part-time hospital physician or teacher who, imbued with the spirit of research, sees in every new and interesting case or group of cases a small problem for investigation—what is the matter with the patient, with all that diagnosis implies—seems unfair and unjust. It is discouraging to those who make up, and must of necessity for several years make up, the bone and sinew of our profession (at least in the United States and Canada) to be told that they must abandon hope who elect to enter the ranks of the general practitioner. Moreover, is it not rather extravagant to declare that little or nothing new can be expected in the future from the "curative" practitioner or specialist? That in making bedside observations he will be working in a field whose fertility is all but exhausted? That there is no prospect that any future Addison, Charcot or Skoda will add anything of value to medicine? That he must be content to do the necessary daily drudgery, that the "clinical science" investigator will do what counts?

It seems to me that these views of Sir Thomas are not sound.

CONCLUSION

In summing up, I realize that there are in this paper omissions and inconsistencies. Nor can I pretend to have offered completely satisfactory solutions to the problems of present day diagnosis. The train of thought, not always connected, is that diagnosis—a process that is necessary in the everyday life of the practitioner of medicine, using the term "diagnosis" as meaning more than a perfunctory labeling of a disease—implies the application of more knowledge than any one human being can acquire, remember or properly utilize. The doctor must then have help which makes qualified laboratories and qualified specialists singly or in groups a necessity.

There has been pointed out the importance of perspective in diagnosis, the ill effects that come from being too particular regarding minute details, yet it has been contended that the practitioner must know of their existence, for minute details may mean much.

Reference has been made to the unwisdom of teaching students merely the so-called essentials. It has been pointed out that such a course may not only make less efficient practitioners but lower the morale and high standards of productive research. The value of "majoring" for the undergraduate and practitioner has been stressed.

I have expressed regret that the line of cleavage that has to be drawn—and such a line is a necessity—between the practitioner and the investigator in clinical science should be so sharply and so heavily drawn as unduly to discourage the one worker and relatively, at least, unduly to exalt the other.

It has seemed as though in the last few years there has been a tendency toward better relations between practitioners, specialists, laboratory investigators, hospitals for the care of patients, hospitals and institutes whose primary object was research, and that harmony and a spirit of cooperation have been gradually displacing the old antagonism, jealousy and misunderstanding. I fear that insistence too sharply on the separation of these two types of doctors may lead to the development of a deadening inferiority complex in the one type of worker and of a superiority complex in the other that will not improve the efficiency of either group and that in the end may have unfortunate results both in the practice of medicine as an art and in the science of medicine in the way of productive research. I endorse most heartily the plea that has been made by Soma Weiss[4] for closer relations rather than wider separation between all these groups in the belief that cooperation will be mutually beneficial.

These problems, to repeat, will be worked out largely by evolution, by trial and error at the bedside of the patient in the home and in the teaching hospitals of medical schools. Their study by capable practitioners and educators has already helped toward clarification. All these efforts should be continued and encouraged.

Finally, unless there is now impending or shall later come upon us a second Dark Age in Science when all progress will be at a standstill, these problems never will be settled. For medical knowledge is not static, it is in a state of flux; new facts and new generalizations

3. Lewis, Sir Thomas: Observations on Research in Medicine: Its Position and Its Needs, Brit. M. J. **1**: 479 (March 15) 1930.

4. Weiss, Soma: Clinical Medicine as a University Discipline, Harvard Medical Alumni Bulletin, April 1936.

are constantly being established, new social and economic theories and practices are being advocated and adopted. All this means there will have to be frequent readjustments. One may repeat what was said a hundred years ago by a wise clinician, Peter Latham: "Whenever in medicine anything like a discovery has been made, anything which has had the show of a principle or a law, a large surrender of cherished opinions has always followed, and knowledge has seemed to begin its career afresh from a new starting place." May I venture to predict and to express the hope that one hundred years from now medical knowledge will seem to begin its career afresh from a new starting place, for it will still be progressing.

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EVALUATION OF DRUGS COMMONLY EMPLOYED AS DIAGNOSTIC AIDS IN CLINICAL MEDICINE

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The administration of a drug to estimate abnormal structure or function of an organ in the body is becoming increasingly common as a diagnostic aid in medicine. Many of the drugs in use for this purpose are administered by a technical assistant and, through popular usage, have come to be looked on merely as playing a role in a laboratory procedure. Drugs so used, therefore, have tended to lose their identity in the minds of physicians as substances capable of inciting specific tissue and cellular activity. Although much has been added to our knowledge of pathologic physiology by their clinical application, their use is not without danger. The use of a chemical in diagnosis is not justifiable if its possible toxicity outweighs the value of the information which may be derived.

For many years clinicians and physiologists have attempted, by the use of certain drugs, to devise means of determining altered organic function, of diagnosing specific tissue damage and of arriving at an accurate prognosis. A great deal has been learned, for example, about diffuse disease of the liver and kidneys, particularly in the late stages, but much is to be learned concerning methods of diagnosis of disease in its early stages when treatment may be more effective.

What, then, is the present status of drugs used as diagnostic aids? What toxic effects are to be expected? What are their limitations and contraindications? Are data obtained from diagnostic tests superior to information gained by a carefully taken history, a thorough physical examination and a few simple laboratory procedures? Answers to these questions must be sought by a critical analysis of methods in use and by a knowledge of the action of drugs employed in diagnosis and of the idiosyncrasies of the particular patient concerned.

Comprehensive knowledge of the action of chemicals in the body will suggest to the discerning and ingenious physician many diagnostic uses. Thus the paralyzing action of atropine on the vagal endings in the heart may be used to differentiate heart block from bradycardia due to excessive vagal tone. Similarly, detailed knowledge of the mode and rate of excretion of drugs from the body may be judiciously applied to diagnostic problems, as when Rowntree and Geraghty [1] made their classic study of phenolsulfonphthalein as an aid to the estimation of renal function. Again, recognition of the opacity of iodine to roentgen rays has permitted the building of certain drugs to specification to meet particular diagnostic problems associated with the visualization of body cavities. Thus Forrestier and Sicard [2] took advantage of the fact that unsaturated physiologically inert lipids combine with enough iodine to be useful with the roentgen ray to visualize pulmonary cavities or even the spinal canal. By using iodine to halogenate phenolphthalein, Cole, Copher and Graham [3] changed a laborious and indirect liver excretory test to a roentgen procedure helpful in determining not only liver excretion but also the presence of the functioning gallbladder. And by iodizing relatively simple organic compounds which are rapidly excreted by the kidney, Zwick [4] developed efficient drugs for the roentgen visualization of the whole urinary tract.

A point of interest with regard to many drugs used for diagnostic purposes is expense. All organic compounds containing iodine are expensive, because iodine is costly and because it requires sound technical skill to maintain uniform composition in iodized compounds.

The chief drugs used for diagnostic purposes are thoroughly described in New and Nonofficial Remedies. Particular care is taken by the Council on Pharmacy and Chemistry of the American Medical Association to call attention to toxic symptoms or untoward effects from the use of these drugs.

Drugs for specific diagnostic purposes may be classified according to the body systems to be examined. Such a classification is suggested in the accompanying table. Or they may be classified according to the application of action: (1) those with specific pharmacologic effect, such as histamine to stimulate gastric secretion; (2) those with specific fates in the body, such as dextrose for testing the carbohydrate tolerance of the liver; (3) those which are selectively and quantitatively excreted by certain organs, such as phenolsulfonphthalein for testing renal function or "rose bengal" for estimating the efficiency of the liver in removing a foreign substance (dye) from the blood; (4) those which are opaque to roentgen rays and are only slightly or slowly absorbed into the body, such as barium sulfate for roentgenographic visualization of the gastro-enteric tract or iodized oils for roentgenologic examination of the lungs or spinal canal; (5) those which are opaque to roentgen rays and also selectively and quantitatively excreted by certain organs, such as phenol tetraiodophthalein for roentgen visualization of the gallbladder, and sodium ortho-iodohippurate for roentgenologic examination of the urinary tract, and (6) those which permit roentgenographic contrast and are rapidly absorbed, such as ethylene for examination of the cerebral ventricles.

From the Departments of Medicine and Pharmacology of the University of California Medical School.
Read before the Section on Pharmacology and Therapeutics at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 17, 1938.

1. Rowntree, L. G., and Geraghty, J. T.: An Experimental and Clinical Study of the Functional Activity of the Kidneys by Means of Phenolsulfonphthalein, J. Pharmacol. **1**: 579 (April 25) 1910.
2. Forrestier, J., and Sicard, J. A.: Radiological Exploration with Iodized Oil, Brit. J. Radiol. **31**: 239 (July) 1926; Ann. Clin. Med. **4**: 869 (May) 1926; Radiology **7**: 385 (Nov.) 1926. Sicard, J. A., and Forrestier, J.: Diagnostic et thérapeutique par le lipiodol: Clinique et radiologie, Paris, Masson & Cie, 1928.
3. Cole, W. H.; Copher, G. H., and Graham, E. A.: Simultaneous Cholecystography and Determination of Hepatic Function, J. A. M. A. **90**: 1111 (April 7) 1928.
4. Zwick, Moses: Intravenous Urography by Means of the Sodium Salt of 5-Iodo-2-Pyridon-N-Acetic Acid, J. A. M. A. **95**: 1403 (Nov. 8) 1930. Excretion Urography, ibid. **101**: 1853 (Dec. 9) 1933.

ROENTGENOGRAPHIC VISUALIZATION OF BODY CAVITIES

After several years of great enthusiasm in the use of iodized oils for roentgenographic visualization of various body cavities, physicians have come to realize the slowness with which these agents may be absorbed and the consequent danger of foreign body reactions at the point where they may lodge. Untoward reactions following the injection of iodized oil into the subarachnoid space of the spinal canal does occur, as has been recently reported by Brown and Carr.[5] The risk of injury from intraspinal injection of iodized oils for localization of cord tumors should be minimized, for example, by careful efforts to remove all trace of the oils at subsequent operation. The Council on Pharmacy and Chemistry has issued a comprehensive report on the history, scope and limitations of iodized oils for roentgenographic visualization of body cavities.[6] This report should be studied by physicians contemplating the use of these agents for the first time.

Using gaseous agents for providing contrast in the roentgenologic examination of the ventricles of the brain is also a hazardous procedure. Aird's [7] thorough search for a suitable gas resulted in the choice of ethylene. This is a great improvement over air, but untoward effects are still possible. If they occur, it is tempting to blame the anesthesia used and to forget the risks involved in introducing a relatively large volume of gas into the cerebrospinal canal.

GASTRO-ENTERIC TRACT

Cannon's [8] brilliant pioneering x-ray investigation of intestinal motility led to the introduction of a drug, barium sulfate, which remains closer to ideal specifications for the purpose than is the case with any other diagnostic agent. Giving full efficiency, it is practically free from untoward effects, is not absorbed unless there is ulceration, is easily administered and is not expensive.

Similar satisfaction cannot be expressed with the drugs used to promote gastric secretion for analysis. Neither alcohol nor histamine is as safe or efficient as may be desired. Bloomfield and Polland's [9] careful studies on the diagnostic use of histamine clearly indicate its scope and limitations. It would seem that acetylcholine or beta-methyl-acetylcholine might be surveyed clinically from the standpoint of diagnostic use for collection of gastric juice. They have been employed to assist in the diagnosis of colonic conditions.

DRUGS USED TO TEST EXCRETORY FUNCTION

Criteria for the recognition of impaired excretory function of an organ have accumulated slowly during the past few decades. By means of the ingestion or the injection of tinctorial substances, biologic products, and radiopaque preparations introduced recently,[10] sufficient information has been accumulated to permit the physician to identify the impaired organ and to determine to some extent the degree of damage to which it has been subjected.

One may question, however, the justification for using so dangerous a drug as thorium dioxide for such a purpose under any circumstance.

Drugs used to determine the excretory function of the liver are limited almost entirely to a few dyes whose value lies in the ability of the liver to remove them from the blood stream into the bile. The two most commonly used dyes, rose bengal and bromsulphalein, when retained in the blood plasma, may be visualized and measured quantitatively by colorimetric methods. The

Acceptable Drugs for Diagnostic Purposes

Body System and Purpose	Drug	Dose and Administration
Body cavities:		
For roentgenographic visualization..... (For scope and limitations see THE JOURNAL Dec. 3, 1932, p. 1946)	Campiodol emulsion N.N.R.	1-20 cc. for retrograde urography
	Lipiodol N.N.R.	1-5 cc., depending on use
	Lipiodol radiologique ascendant N.N.R.	1-2 cc. intraspinally
	Lipoiodine N.N.R.	5-20 cc., depending on use
	Ethylene U.S.P.	10 cc. intraspinally
Eye:		
For dilating pupil to permit retinal examination	Cocaine hydrochloride	1-2 drops 1 per cent solution
	Eucatropine N.N.R.	2 drops 5-10 per cent solution
	Homatropine hydrochloride N.N.R.	2 drops 1 per cent solution
For detection of corneal lesions.....	Fluorescein soluble U.S.P.	1-2 drops 1 per cent solution
Gastro-enteric tract:		
For collection of gastric juice.....	Alcohol U.S.P.	50 cc. of 7 per cent solution
	Histamine phosphate U.S.P.	0.5 mg. subcutaneously
For roentgenographic visualization.....	Barium sulfate U.S.P.	100-150 Gm. orally
Kidney function	Phenolsulfonphthalein U.S.P.	1 cc. of 0.6 per cent solution, intramuscularly or intravenously
Liver function ..... (See New and Nonofficial Remedies for precautions and special directions)	Bromsulphalein N.N.R.	2 mg. per Kg. intravenously in 5 per cent solution
	Iodophthalein soluble U.S.P.	4 Gm. orally, or 3-3.5 Gm. in 24-28 cc. freshly distilled and sterilized water, intravenously
	Phenoltetrachlorphthalein N.N.R.	50 to 400 mg. of disodium salt intravenously
	Phentetiothalein sodium N.N.R.	4 Gm. orally, or 40 mg. per Kg. in 8 per cent freshly sterilized water solution, intravenously
	Rose bengal (tetra-iododichlorfluorescein).....	100 mg. in 10 cc. sterile physiologic salt solution, intravenously
Pyelography ..... (Consult New and Nonofficial Remedies for special precautions and directions)	Diodrast N.N.R.	7 Gm. in 20 cc. of sterile water, intravenously
	Hippuran N.N.R.	12 Gm. orally; 12 Gm. in 25 cc. of sterile water intravenously; 15 per cent sterile solution for retrograde administration
	Neo-Iopax N.N.R.	15 Gm. in 20 cc. of sterile water, intravenously
	Skiodan N.N.R.	330 mg. per Kg. in 20 per cent sterile solution, intravenously

5. Brown, H., and Carr, J. L.: The Effect of Lipiodol in the Subarachnoid Space, to be published.

6. Dangers of the Injection of Iodized Oils, Report of Council on Pharmacy and Chemistry, J. A. M. A. **99**: 1946 (Dec. 3) 1932.

7. Aird, R. B.: Experimental Encephalography with Anesthetic Gases, Arch. Surg. **32**: 193 (Feb.) 1936.

8. Cannon, W. B.: The Movements of the Stomach Studied by Means of the Roentgen Rays, Am. J. Physiol. **1**: 359, 1898; The Movements of the Intestines, Studied by Means of the Roentgen Rays, ibid. **6**: 251, 1902.

9. Bloomfield, A. L., and Polland, W. S.: Gastric Anacidity: Its Relation to Disease, New York, Macmillan Company, 1933.

10. Yater, W. M., and Whitmore, E. R.: Histiopathologic Study of Tissues of Sixty-Five Patients Injected with Thorium Dioxide Sol for Hepatosplenography, with a Follow-Up Study of Ten Old Cases, Am. J. M. Sc. **195**: 198-205 (Feb.) 1938.

technic of the rose bengal test was described in 1924[11] and, as first proposed, the degree of excretion of the dye was estimated by colorimetric readings. Althausen, Biskind and Kerr[12] recently have shown that the test could be more sensitive and the limits of the test 5 per cent lower by using the spectroscope instead of the colorimeter. The experience obtained from the performance of this test on 302 patients at the University of California Hospital have been reported recently.[13] For the purpose of this study, 10 cc. of a 1 per cent solution of rose bengal (di-iodo-tetrachlor fluorescein) in physiologic solution of sodium chloride was injected intravenously. A specimen of blood was removed at two minutes to be used as the standard for maximum distribution of the dye in the blood stream. The results were classified according to the amount of the dye retained in the blood plasma. Tests showing a retention of from 55 to 65 per cent in eight minutes and from 35 to 45 per cent in sixteen minutes were considered as slightly positive, those from 66 to 75 per cent and from 46 to 55 per cent respectively as moderately positive, and those in excess of 75 and 55 per cent respectively as markedly positive. In intrinsic diseases of the liver this test was shown to be extremely satisfactory, since retention of the dye in patients with acute hepatitis showed a positive result in 94 per cent of cases and in patients with chronic hepatitis a positive result in 96 per cent of cases.

The dye bromsulphalein has come into more general use than rose bengal as a test of the excretory function of the liver. In the performance of this test 5 mg. of the dye per kilogram of body weight[14] is injected intravenously. At the end of one hour a single specimen is removed, which eliminates the three samples of blood required in performing the rose bengal test. The retention of 10 per cent or more of the dye is considered abnormal and indicative of liver damage. Results comparable to those obtained with the use of rose bengal have been reported by Magath.[15] This author found a retention of bromsulphalein in 96 per cent of cases in which there was evidence of parenchymal hepatic damage.

It has been stated[16] that the retention of dye may more or less parallel the degree of icterus. However, some modification of this statement must be made, depending on the type of structural alteration of the liver. In patients recovering from "catarrhal jaundice" the rose bengal test may show a return to normal function of the liver while the icterus index is still considerably elevated. Furthermore, it is well known that hepatic damage may exist without jaundice and ascites. Such alteration may be suspected in a patient with a slightly enlarged liver, but impairment of function may be determined by the dye excretion test. An example of this situation is given in the following case:

Enlarged liver, clinically asymptomatic; macrocytic hypochromic anemia; profuse menses; impaired hepatic function.

History.—M. M., a married woman, aged 33, Italian, came to the medical division of the outpatient department of the University of California Aug. 4, 1937, because of weakness, loss of weight and profuse menses. For eight months prior to entry a variety of symptoms had developed, among which were irregular episodes of profuse vaginal bleeding and generalized pruritus. An intractable insomnia had developed and she had had hot and cold flushes passing over the body. There was a tendency toward nervousness and excessive perspiration. Since childhood it had been her custom to consume not less than 1 quart of wine daily. In recent years this amount was frequently greatly exceeded and on occasions was supplemented by the use of whisky.

Examination.—The patient appeared well developed, in no obvious distress but with slight evidence of loss in weight. The skin was pale, warm and moist. Lymphadenopathy was not demonstrable. The thyroid gland was not enlarged. The liver edge was felt 4 cm. below the right costal margin. The edge felt smooth, was not tender and had a sharp border. There was a small mass adherent to the right lateral border of the uterus.

Laboratory Procedures.—Examination of the blood showed red blood cells 3,100,000 per cubic millimeter, hemoglobin 60 per cent (8.4 Gm.), and leukocytes 11,600 per cubic millimeter. The differential count was filamented polymorphonuclear leukocytes 57 per cent and nonfilamented 19 per cent, lymphocytes 21 per cent and monocytes 2 per cent. The bleeding time was five minutes and the platelets were 110,000 per cubic millimeter. A specimen of blood clotted in ten minutes (method of Lee and White) and showed a volume of 33 cc. of packed cells per hundred cubic centimeters of whole blood. The mean corpuscular volume was 100 cubic microns, the volume index 1.14 and the color index 0.9. The basal metabolic rate was 36.5 per cent plus. The rose bengal test of liver function showed a retention of 62 per cent of dye at eight minutes and 44 per cent at sixteen minutes. The icterus index was 6.

Course of Illness.—The patient entered the University of California Hospital, where, following dilation and curettage and the implantation of radium in the uterus there was a cessation of vaginal bleeding. Six months later she was examined in the outpatient department. On this occasion the liver was still enlarged. Examination of the blood showed 80 per cent hemoglobin (11.2 Gm.) and 3,450,000 erythrocytes per cubic millimeter. The icterus index was 7. The rose bengal test of liver function showed retention of 64 per cent of dye at eight minutes and 48 per cent at sixteen minutes.

There are many conflicting statements in the medical literature relative to the value of drugs used to determine the excretory function of the kidneys. The test most commonly used was described by Rowntree and Geraghty[1] in 1910 and depends on the ability of the kidneys to remove the dye phenolsulfonphthalein from the blood stream over a period of two hours. There is little doubt that the failure of the kidneys to remove the dye gives evidence of their impaired function, but there is considerable doubt as to the value of a single test in determining prognosis. Christian and O'Hara[17] were of the opinion that the two hour test gave little or no evidence of early stages of renal disease. Chapman and Halsted[18] believed that the test could be made more sensitive by examining specimens of urine at intervals of fifteen minutes instead of two specimens at hourly intervals. Recently MacKay and Rytand[19] reported the phenolsulfonphthalein test as being of more value

11. Delprat, G. D.; Epstein, N. N., and Kerr, W. J.: A New Liver Function Test; Elimination of Rose Bengal when Injected into the Circulation of Human Subjects, Arch. Int. Med. **34**: 533-534 (Oct.) 1924.

12. Althausen, T. L.; Biskind, G. R., and Kerr, W. J.: The Rose Bengal Test of Hepatic Function, J. Lab. & Clin. Med. **18**: 954 (June) 1933.

13. Wever, G. K.; Althausen, T. L.; Biskind, G. R., and Kerr, W. J.: Liver Function in Hepatic and Extrahepatic Diseases: I. The Results of Clinical Experience with 326 Cases, Am. J. Digest. Dis. & Nutrition **2**: 93-99 (April) 1935. Biskind, G. R.; Althausen, T. L.; Wever, G. K., and Kerr, W. J.: Liver Function in Hepatic and Extrahepatic Diseases: II. Clinicopathological Correlation and Evaluation of the Usefulness of Liver Function Tests, ibid. **2**: 167-172 (May) 1935.

14. O'Leary, P. A.; Greene, C. H., and Rowntree, L. G.: Diseases of the Liver: VIII. The Various Types of Syphilis of the Liver with Reference to Tests for Hepatic Function, Arch. Int. Med. **44**: 155-194 (Aug.) 1929.

15. Magath, T. B.: The Takata-Ara Test of Liver Function, Am. J. Digest. Dis. & Nutrition **2**: 713-716 (Feb.) 1936.

16. Sprunt, T. P.: The Diagnosis and Treatment of Cirrhosis of the Liver in Its Early Stages, J. A. M. A. **109**: 1945-1949 (Dec. 11) 1937.

17. Christian, H. A., and O'Hara, J. P.: Oxford Med. **3**: 631, 1925.

18. Chapman, E. M., and Halsted, J. A.: The Fractional Phenolsulfonphthalein Test in Bright's Disease, Am. J. M. Sc. **186**: 223-232 (Aug.) 1933.

19. MacKay, E. M., and Rytand, D. A.: Significance of the Phenolsulfonphthalein Test of Renal Function, Arch. Int. Med. **55**: 131 (Jan.) 1935.

in determining renal function than the estimation of urea clearance or the tests for maximum specific gravity of the urine. Elliot and Nuzum [20] and Don [21] concluded, from a similar study, that there was a failure of these three tests to agree closely and that whatever agreement existed between them was little more than could be expected as a chance occurrence.

It is the opinion of many investigators [22] that none of the tests employed will give accurate information as to the possible duration of the disease or the probable degree of return of function. The phenolsulfonphthalein test, however, when used at monthly intervals, may offer an approximate gage of the extent of improvement in the particular function tested. It is to be emphasized that the clinical examination of the patient, the enumeration of the cellular elements, the various types of casts in the urine and the determination of the ability of the kidney to concentrate must still be regarded as of foremost importance.

Both the liver and the kidneys perform many functions concerned with metabolism. A number of so-called metabolic tests offering many practical and theoretical possibilities have been devised in an attempt to test these functions.

CHEMICALS USED TO DETERMINE FUNCTIONS OF METABOLISM

Food substances, when used for the purpose of testing a metabolic function of an organ, may in a restricted sense be considered as acting similarly to chemicals or drugs. So far as tests for metabolic functions are concerned, however, with few exceptions little has been done that is of clinical value. It is well known that the liver plays an important role in protein metabolism and that variations in plasma protein occur in association with injury to the hepatic parenchyma.[23] Bollman, Mann and Magath [24] have shown that total extirpation of the liver is followed by a cessation in the formation of urea and a rise in the concentration of uric acid in the tissues and body fluids. This does not occur with partial hepatectomy. The statement is made that a considerable portion of the liver must be damaged before its function in metabolism is affected materially, and this precludes the possibility of devising a test of diagnostic or prognostic value. Tests concerned with the metabolism of fat and cholesterol are equally disappointing. This subject was reviewed recently by Epstein and Greenspan [25] and by Snell and Magath,[26] and those interested are referred to these articles for further study.

One of the functions of the liver is to prevent the accumulation of excessive quantities of dextrose in the blood stream. The modified dextrose tolerance test has been designed as a test of this function.[27] This test depends on the ability of the liver to maintain the blood sugar at a certain level following the administration of dextrose, insulin and water. Wever and his associates [13] were able to show by this method, in 92 per cent of patients studied with acute hepatitis, variations in the values for blood sugar which indicated a low reserve of glycogen. This figure corresponds closely to the results obtained with the rose bengal test. In chronic hepatitis and neoplasms of the liver the tests failed to agree as closely. The galactose tolerance test [28] also is used as a diagnostic procedure to determine hepatic function. Similar to the dextrose tolerance test, it may be of aid during the period of maximum damage to the liver cells. However, on account of the high degree of reparative power of the liver, variations in the metabolic function may be expected to occur. The newly formed cells may participate in metabolism of glycogen and aid in maintaining a normal level of blood sugar. Therefore a test showing a normal reaction does not always exclude injury to the liver cells.

ROENTGENOGRAPHIC VISUALIZATION OF EXCRETORY FUNCTION

Cole, Copher and Graham [3] first recognized the value of using iodine to halogenate phenolphthalein in order to obtain the advantage of roentgenologic examination of hepatic and cholecystic excretion and visualization of the gallbladder. This stimulated Zwick's search for an iodized compound which would be rapidly eliminated by the kidneys in sufficient concentration to permit roentgenographic study of the urinary tract. Many drugs can be used for both these purposes. For cholecystography rose bengal might be used if the required concentration were not toxic, and the bromiodophenolphthaleins might be studied. But practically only two tetraiodo derivatives are used, soluble iodophthalein U. S. P., in which the iodine is attached to the phenol rings, and phentetiothalein sodium N. N. R., in which the iodine is attached to the phthalein radicle.

As reflected in the comments of the Council on Pharmacy and Chemistry on phentetiothalein sodium N. N. R., clinical opinion favors this drug rather than the pharmacopeial soluble iodophthalein for visualization of the gallbladder and simultaneous test of hepatic function. It is claimed to be better tolerated and more efficient. However, its use is contraindicated in uremia or myocardial insufficiency, and caution is enjoined in jaundice. The technic of administration is fully explained in New and Nonofficial Remedies.

For roentgenography of the urinary tract, the Council has approved four of the many proposed for inclusion in New and Nonofficial Remedies: diodrast, hippuran, neo-iopax and skiodan.

For urography, diodrast N. N. R. has become very popular, probably because the relatively small amount necessary to give the required concentration for effectiveness reduces the cost in comparison with similar agents. But untoward reactions occur only too frequently. These are nausea, vomiting, flushing, eruptions of the skin, dyspnea and cyanosis. The drug also causes a considerable fall in blood pressure. Dehydration and fasting of a patient before the compound

20. Elliot, A. H., and Nuzum, F. R.: Evaluation of Measures of Renal Function in Persons with Arteriosclerotic Bright's Disease, Arch. Int. Med. **57**: 1151-1163 (June) 1936.

21. Don, C. S. D.: Tests for Renal Function, Brit. M. J. **2**: 54 (July 10) 1937.

22. Addis, Thomas, and Oliver, Jean: The Renal Lesions in Bright's Disease, New York, P. B. Hoeber, Inc., 1931. Ellis, L. B., and Weiss, Soma: Normal Variations in Renal Function Tests with Discussion of Their Physiologic Significance, Am. J. M. Sc., **186**: 233-241 (Aug.) 1933. Elliot and Nuzum.[20] Don.[21]

23. Kerr, W. J.; Hurwitz, S. H., and Whipple, G. H.: Regeneration of Blood Serum Protein: II. Influence of Diet upon Curve of Protein Regeneration Following Plasma Depletion, Am. J. Physiol. **47**: 370-378 (Dec. 1) 1918.

24. Bollman, J. L.; Mann, F. C., and Magath, T. B.: Studies on the Physiology of the Liver: VIII. Effect of Total Removal of the Liver on the Formation of Urea, Am. J. Physiol. **69**: 371-392 (July) 1924; X. Uric Acid Following Total Removal of the Liver, ibid. **72**: 629-646 (May) 1925.

25. Epstein, E. Z., and Greenspan, E. B.: Clinical Significance of the Cholesterol Partition of the Blood Plasma in Hepatic and Biliary Diseases, Arch. Int. Med. **58**: 860-890 (Nov.) 1936.

26. Snell, A. M., and Magath, T. B.: The Use and Interpretation of Tests for Liver Function: A Clinical Review, J. A. M. A. **110**: 167-174 (Jan. 15) 1938.

27. Althausen, T. L., and Mancke, R.: Kombinierte Leberfunctionsprüfung (Insulin-, Glykose- und Wasserbelastung), Arch. f. klin. Med. **170**: 294-301 (March 25) 1931.

28. Bauer, Richard: Unsere Kenntnisse über Leberfunktion und ihre Verwertung für die Klinik, Wien. klin. Wchnschr. **45**: 1577-1581 (Dec. 23) 1932. White, F. S.: The Galactose Tolerance and Urobilinogen Tests in the Differential Diagnosis of Painless Jaundice, Am. J. Digest. Dis. & Nutrition **4**: 315-325 (July) 1937.

is injected is recommended as a way to reduce the severity of its effects. It is contraindicated in disorders of the liver, nephritis, uremia, tuberculosis and hyperthyroidism. Recently Robb [29] has used this drug for roentgenologic examination of the heart chambers following rapid injection into the cephalic vein.

Zwick's extensive survey of compounds suitable for urography led finally to a choice of sodium orthoiodohippurate (hippuran N. N. R.) as the one closest to the ideal. It is less toxic than other similar agents, and may even be administered orally. Neo-iopax N. N. R., a diiodopyrodine derivative like diodrast, produces local irritation and other reactions at the site of injection. It produces untoward systemic effects similar to diodrast.

CONCLUSION

Drugs are usually considered to be related solely to therapeutics. Knowledge of the action of chemicals on living things, however, may also be applied to many diagnostic problems in medicine. If such application is made, the chemical used for a diagostic purpose should be treated as a drug quite in the same manner as when its pharmacologic action is applied in therapy. In the diagostic use of drugs, as when they are employed for treatment, the total physiologic action of the chemical agent must be kept in mind. A most important consideration is that the physician should carefully weigh the possible hazard from the use of the drug against the value of the knowledge he might gain by giving it.

Among the general physiologic actions of drugs which the wise physician will consider in using drugs for diagnostic purposes are local actions at the point of administration, relative rates of absorption and excretion, the fate of the chemical in the body and its mode of excretion, possible systemic reactions and untoward effects, and the relation of dosage to these effects.

ABSTRACT OF DISCUSSION

DR. FRANK NUZUM, Santa Barbara, Calif.: The review we have just heard was most impressive. I am reminded of the statement attributed to Dr. P. J. Hanzlik, that it is a good plan for the pharmacologist to prove the action of a chemical before practicing physicians use such a substance for new test material. It is my understanding that these various drugs and tests as outlined by the speakers have been carefully worked out and can be safely used by medical men. Regarding kidney function tests, I think that some medical men have the notion that the phenolsulfonphthalein and other tests are very accurate. It has come to be known that these tests are not extremely accurate and that a great deal of kidney damage must result before the present tests give evidence of such change. Recently the Goldblatt work, which has attracted so much attention throughout the country, has emphasized that the kidneys in experimental animals can be damaged to a very appreciable degree before our present clinical tests show much change. It has been assumed by experimental workers that the hypertension produced in animals by the Goldblatt plan is comparable to essential hypertension in man. Further work is needed to prove this. Kidney function tests in the Goldblatt animals may show little change, when, as a matter of fact, the kidney is badly damaged. If groups of human beings with hypertension are given three standard kidney function tests, the phenolsulfonphthalein, the Volhard and the urea clearance, there will be a 10 per cent less efficient kidney so far as these tests are concerned as compared with groups of normal individuals and compared decade by decade. While we do get a 10 per cent less efficient renal response by the kidneys in persons with essential hypertension, conclusions cannot be accurately drawn. These tests are undoubtedly not sensitive enough to indicate the degree of change that has actually taken place.

RUSSELL L. HADEN, Cleveland: This paper had to do with the use of drugs, but it concerned particularly the study of vital functions. We have been much interested in our clinic in studying liver functions, in seeing what we could determine from the variation in the shape and size of the red cell as an index of damage to the liver. And by running quite a large series of comparative experiments we have found that the one most common thing that happens, when the liver is damaged, is that there is a change in the size and shape of the red cell; that, if one gets an obstructive jaundice, what happens to the red cell is that it flattens out without much change in volume. So there is an increased diameter with normal volume. But when there is a parenchymatous involvement of the liver, one gets uniformly an increase in the size of the cell.

29. Robb, George, and Steinberg, Israel: Visualization of the Pulmonary Circulation in Man by Means of Peripheral Intravenous Injection, to be published.

DISEASE OF BILIARY TRACT ASSOCIATED WITH DISTURBANCES IN CHOLESTEROL METABOLISM

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AND
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This paper reports the results of treatment with the low cholesterol diet previously described by Twiss and Greene.[1] One hundred cases of disease of the gallbladder associated with hypercholesteremia were studied. Eighty of the patients were treated medically with the low cholesterol diet; a control group of twenty-one patients with hypercholesteremia did not receive the low cholesterol diet. Twenty surgical patients with hypercholesteremia before operation received the low cholesterol diet after cholecystectomy; for control purposes there were fourteen similar surgical patients who did not have the low cholesterol diet. A further investigation was made of twelve cases in which hypercholesteremia developed only after cholecystectomy.

The principles of treatment (as described at the 1932 session of the American Medical Association) included the establishment of three types of diet designed to fit the needs of the patient with disease of the gallbladder. These needs were determined by a careful initial diagnostic work-up. An original description of these diets and their use was published by Twiss and Greene; [1] a revision of the diets and the indications for their use were described in full by Bridges.[2]

Disturbances in cholesterol metabolism, although generally conceded to be a major contributing cause in the formation of gallstones, are as yet little understood phenomena. Comprehensive studies and reviews of the literature have been made, however, by Rolleston and McNee,[3] Muller,[4] Gardner and Gainsborough,[5]

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1. Twiss, J. R., and Greene, C. H.: Dietary and Medical Management of Diseases of the Gallbladder, J. A. M. A. **101**: 1841 (Dec. 9) 1933.
2. Bridges, M. A.: Dietetics for the Clinician, ed. 3, Philadelphia, Lea & Febiger, 1937.
3. Rolleston, H. D., McNee, J. W.: Diseases of the Liver, Gallbladder and Bile Ducts, ed. 3, New York, Macmillan Company, 1929.
4. Muller, G. L.: The Cholesterol Metabolism in Health and in Anemia, Medicine **9**: 119 (May) 1930.
5. Gardner, J. A., and Gainsborough, Hugh: Blood Cholesterol Studies in Biliary and Hepatic Disease, Quart. J. Med. **23**: 465-483 (July) 1930; Studies on Cholesterol Content of Normal Human Plasma, Biochem. J. **22**: 1048, 1928.

Schönheimer,[6] Joslin,[7] Hurxthal,[8] Rehfuss and Nelson[9] and others. Cholesterol is a secondary alcohol which is present in all cells of the body and is of great practical importance as the chief constituent of gallstones. Its source is both endogenous and exogenous, the endogenous portion being derived from the normal synthesis within the body as well as from the destruction of tissues and red blood cells. Another possible source may be the endocrine glands, such as the adrenals and the ovaries. The exogenous part comes from foods high in cholesterol of animal origin, to be discussed later. The cholesterol is probably absorbed from the intestinal tract in the form of free cholesterol and esterified in the wall of the intestine, according to Sperry.[10] The cholesterol esters and free cholesterol are carried by the portal vein to the liver. Here the cholesterol is deesterized and excreted in the bile as free cholesterol, to be concentrated in the gallbladder and excreted in the bile into the intestinal tract. The greater part of this cholesterol is probably reabsorbed.

In discussing the relationship of cholesterol metabolism to the biliary tract, it is necessary first to recognize the fact that disturbances in cholesterol metabolism may be due to causes not related in that tract; hypercholesteremia may be present with diabetes mellitus, xanthoma, nephrosis, uremia, hypothyroidism, menstruation and pregnancy. Aschoff[11] has emphasized the importance of hypercholesteremia resulting from starvation and rapid loss of weight. The opposite condition of hypocholesteremia may occur with hyperthyroidism, acute infections, tuberculosis, pernicious anemia, primary degenerative disease of the liver, chronic toxic hepatitis and cardiac decompensation. It has been reported by Rothschild and Wilensky[12] as following the use of diets low in cholesterol.

In the biliary tract itself the most extreme degrees of hypercholesteremia are found with acute obstructive jaundice. The condition may be found to a lesser degree with chronic cholecystitis or functional disorders of the biliary tract with or without stone. Hypocholesteremia is sometimes found with starvation and with severe parenchymatous disease of the liver, which is frequently associated with conditions such as diabetes.

The dietary treatment of disease of the biliary tract associated with hypercholesteremia, as previously outlined, was based primarily on a twofold hypothesis: (*a*) that hypercholesteremia may result from the excessive ingestion of foods high in cholesterol and fats and (*b*) that a reduction of cholesterol intake by patients having hypercholesteremia causes a decrease in the amount of cholesterol in the blood. The experimental and clinical reports on both these subjects are conflicting and subject to differences of opinion in interpretation. The clinical improvement which we found to follow the use of the low cholesterol diets, however, seemed to justify further investigation as to their effect on the cholesterol level of the blood serum. The factor of endogenous cholesterol formation may be regarded as of secondary importance in this study, as demonstrated by Rehfuss and Nelson,[9] Chauffard,[13] Leuret and Dutrenit[14] and other investigators.

The level of the cholesterol in the blood is usually considered to be regulated by the liver. The cholesterol content of the bile is usually dependent on the cholesterol content of the circulating blood in the absence of such factors as obstruction, as shown by McNee,[15] Chauffard,[13] and Gardner.[16] These investigators concluded that the cholesterol in the bile is derived directly from the blood serum and is a true excretion of the liver. Aschoff[11] stated that "there is a certain dependency of the cholesterin content of the bile upon that of the blood," while Rolleston and McNee[3] expressed the opinion that circumstances which increase the cholesterol content of the blood plasma lead to a corresponding increase in the bile. Rehfuss and Nelson[9] concluded: "We believe this fact is generally acknowledged by clinicians throughout the world and it forms a basis for a further study of this very important problem."

While the authorities quoted have stated that there is a definite relationship between the cholesterol levels of the bile and the blood serum, it should be added that other investigators have not been convinced of this relationship. It is not within the scope of the present report to include the numerous observations and opinions in this regard. We have nevertheless investigated the cholesterol content of the concentrated gallbladder bile (or B bile of Lyon) obtained by the duodenal drainage tube from thirty patients with hypercholesteremia. The same determinations were made for a similar series of twelve patients who did not have hypercholesteremia. As shown in the accompanying table, there was an apparent comparable increase in the cholesterol content of the concentrated bile in the cases of hypercholesteremia. Cholesterol determinations were also made on the bile removed from the gallbladder at operation for a series of patients with and without hypercholesteremia. The results, however, were in both instances so extremely variable that no definite conclusions could be based on them.

Cholesterol Content of the Blood and of the Concentrated Gall Bile Obtained by Drainage of Patients With and Without Hypercholesteremia

	Blood, Mg. per 100 Cc.*	Bile, Mg., per 100 Cc.*
Hypercholesteremia (30 patients)..	239	59
Controls (12 patients).....	175	38
	64	21
Increase in cholesterol content in hypercholesteremic patients.....	36%	55%

* The figures are averages.

The various points of view with regard to the relationship of the cholesterol and bile salts of the gallbladder bile have been reviewed in detail by Twiss and

6. Schönheimer, Rudolf: Ueber eine Störung der Cholesterin-Ausscheidung (Ein Beitrag zur Kenntnis der Hypercholesterinämien), Ztschr. f. klin. Med. **123**: 749-763, 1933.
7. Joslin, E. P.: Treatment of Diabetes Mellitus, ed. 5, Philadelphia, Lea & Febiger, 1935.
8. Hurxthal, L. M., and Hunt, H. M.: Clinical Relationships with Summary of Our Present Knowledge of Cholesterol Metabolism, Ann. Int. Med. **9**: 717-727 (Dec.) 1935.
9. Rehfuss, M. E., and Nelson, G. M.: Medical Treatment of Gallbladder Disease, Philadelphia, W. B. Saunders Company, 1936.
10. Sperry, Warren: Personal communication to the authors.
11. Aschoff, Ludwig L.: Lectures on Pathology, New York, Paul B. Hoeber, Inc., 1924.
12. Rothschild, M. A., and Wilensky, A. O.: The Disturbances of the Cholesterin Metabolism as a Factor in Gallstone Formation, Am. J. M. Sc. **156**: 239-248 (Aug.) 1918.
13. Chauffard, A.: La lithiase biliare, ed. 2, Paris, Masson & Cie, 1922.
14. Leuret, François, and Dutrenit, Jean: Le cholestérol, Paris, J. B. Baillière et fils, 1934.
15. McNee, J. W.: Zur Frage des Cholesteringehalts der Galle während des Schwangerschaft, Deutsche med. Wchnschr. **39**: 994-996, 1913; Cholesterin: An Account of Its Relation to Pathology and Physiology, Quart. J. Med. **7**: 221, 1913-1914; Jaundice: Review of Recent Work, ibid. **16**: 390 (July) 1923.
16. Gardner, J. A., and Lander, P. E.: On the Cholesterol Content of the Tissues of Cats Under Various Dietetic Conditions and During Inanition, Biochem. J. **7**: 576, 1913.

Greene.[1] Briefly it may be stated that a relative increase in the cholesterol concentration of the gallbladder bile, particularly in the presence of infection or stasis, may result in the precipitation of cholesterol and the formation of stones. That infection is not essential to the formation of stones, however, has been emphasized by Sweet,[17] Rovsing,[18] Aschoff [11] and others. Metabolic disturbances associated with hypercholesteremia which result in an increased excretion of

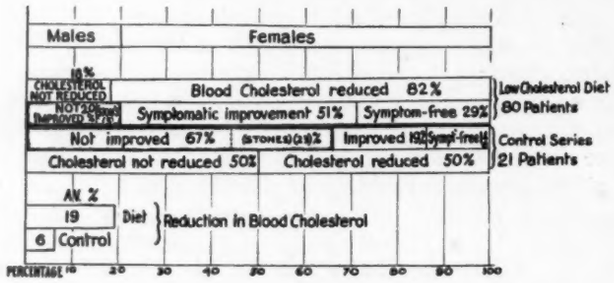

Fig. 1.—Statistics for 101 medical patients with hypercholesteremia treated with and without the low cholesterol diet.

cholesterol in the bile seem apt to result in the formation of stones, particularly when there is biliary stasis.

The effect of cholecystectomy on cholesterol metabolism has received but little study. Sweet [17] has shown that in the dog removal of the normal gallbladder results in a transient hypercholesteremia of about forty days' duration, the blood cholesterol at times being double the preoperative amount. It is generally considered that bile is the essential factor in the emulsification and digestion of fats. Pribram,[19] however, found experimentally that the essential element in the digestion of fats is not the bile but a secretion of the wall of the gallbladder. The confirmation of this finding would seem to afford a basis for further clinical studies. He said: "Patients are common who have undergone a removal of the gallbladder for biliary lithiasis who are very well for two or three years. Then, generally, after a too fatty meal or other fault in diet, a hepatic crisis occurs with congestion of the liver, epigastric pressure, intolerance of foods, the development of a hepatitis. After this accident there is a tendency to permanent and repeated relapses." The use of a diet low in fats is advised to prevent this condition.

A discussion of the use of the low cholesterol diet demands recognition of the fact that the ingestion of fats as well as foods high in cholesterol increases the blood cholesterol. Bloor [20] found that the feeding of fats to carnivorous and omnivorous animals results in an increase of the blood fats and cholesterol, a much greater increase resulting with herbivorous animals, such as the rabbit. The same author stressed the variability in values of the blood cholesterol, which are greater with a high fat diet and lower with a limited fat intake. The clinical application of these facts has been demonstrated by Joslin,[7] who found in the study of a series of diabetic persons that a lowered fat intake was followed by an average drop in cholesterol of from 360 to 208 mg. per hundred cubic centimeters of blood. Other factors, however, which must here be taken into consideration are the improvement in the diabetic condition and the effect of an increased carbohydrate intake.

The relationship of menstruation to variations in blood cholesterol is of particular interest in view of the high proportion of females in this series of patients. An increase in blood cholesterol during menstrual periods has been shown to exist by Leuret and Dutrenit,[14] as well as Okey and Stewart.[21] The known elevation of blood cholesterol following experimental destruction of blood affords interesting speculation as to a possible relationship.

The work on which the present report is based was done in the biliary tract clinic of the New York Post-Graduate Hospital under the direction of Dr. R. Franklin Carter. The diagnostic work-up in each case included a determination under standard fasting conditions of the blood cholesterol, the icterus index and the van den Bergh reactions, as well as a history taking, physical examination, a cholecystogram and drainage of the biliary tract. Only those patients were included in this series who showed relative hypercholesteremia, having an initial blood cholesterol content of over 200 mg. per hundred cubic centimeters. Diabetes and kidney disease were ruled out by determinations of the sugar and urea nitrogen in the blood in practically all cases. Patients having jaundice or obstruction of the common duct were eliminated by exclusion of all patients having an elevation in the icterus index. Determinations of the basal metabolism were made for all patients suspected of having glandular dysfunction, those having an abnormal rate being omitted from the study.

With the medical patients, the follow-up studies included a detailed interval history and repeated drainage of the biliary tract in addition to periodic determi-

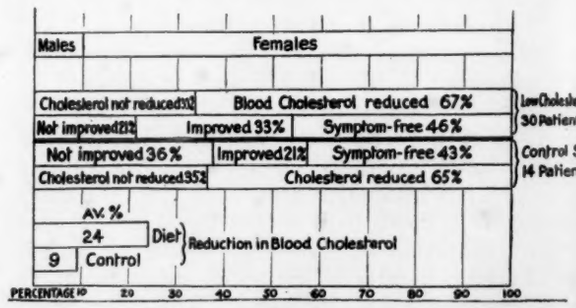

Fig. 2.—Statistics for forty-four surgical patients with hypercholesteremia treated after cholecystectomy with and without the low cholesterol diet.

nations of the blood cholesterol. With patients coming to operation, specimens of bile were obtained from the gallbladder after its removal; these were analyzed for cholesterol and bile salts, the biliary sediment was examined microscopically and bacteriologic cultures were made. The follow-up study of the medical and surgical cases was similar. The determinations of the cholesterol content of the blood and bile were made according to Sackett's modification of Bloor's method.[22]

17. Sweet, J. E.: The Gallbladder, Its Past, Present and Future, Internat. Clin. **50**: 187-226 (March) 1924.

18. Rovsing, T.: Zur Beleuchtung und Wertschätzung Naunyns und andern Infectionstherorien bezüglich der Pathogenese der Gallenstein Krankheit, Acta chir. Scandinav. **56**: 103-207, 1923.

19. Pribram, B. O.: L'insuffisance hépatique pré- et postopératoire et son traitement préventif et curatif, Congrès international de l'insuffisance hépatique, Vichy, 1937, pp. 485-523.

20. Bloor, W. R.: Diet and the Blood Lipids, J. Biol. Chem. **95**: 655 (March) 1932.

21. Okey, Ruth, and Stewart, Dorothy: Effect of Sterol Content of Diet upon Cyclic Variations in Blood Cholesterol in Woman, J. Biol. Chem. **97**: xxix (July) 1932.

22. Sackett, J. E.: Modifications of Bloor's Method for the Determination of Cholesterol in Whole Blood or Blood Serum, J. Biol. Chem. **64**: 203 (May) 1925.

Since the increased ingestion of fats results in an increase in blood cholesterol, foods high in fats were restricted in the low cholesterol diets. The foods highest in cholesterol, as originally listed by Twiss and Greene,[1] include brain, egg yolk, fish roe, kidneys, liver, sweetbreads, butter, fatty fish and lard. The foods highest in fats, according to Bridges,[2] are avocado, bacon, butter, catfish, caviar, cheese, chocolate, cocoa, cream, egg yolk, meat fats and fried foods.

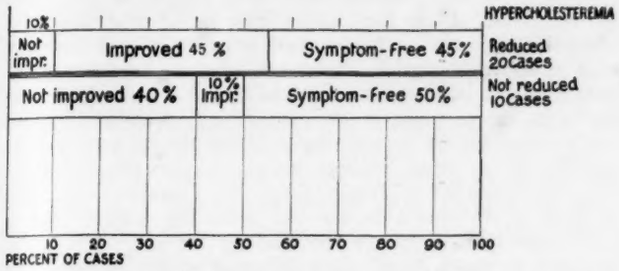

Fig. 3.—Observations on thirty surgical patients treated with a low cholesterol diet after cholecystectomy.

Our experience having confirmed the opinion of Pribram [19] that clinically butter and olive oil are the fats best tolerated and animal fats the least well tolerated, butter in moderate amounts is the only fat we permit in the low cholesterol diets.

When there has been no satisfactory reduction in the blood cholesterol after the prescription of a low cholesterol diet, we have frequently found that the diet has not been observed. Consequently we ask the patient at every visit whether the diet has been followed. The most satisfactory results both in reduction of the blood cholesterol and in relief of symptoms have been found when intelligence and cooperation with the physician have been evident.

An analysis of the 110 medical and surgical cases of hypercholesteremia in which treatment was with the low cholesterol diet indicates that this condition is far more prevalent in women than in men. In the medical group there were twenty-one males and eighty-one females and in the surgical group four males and forty females. The average age varied from 39 to 42 years.

Of the eighty medical patients with hypercholesteremia who were treated with the low cholesterol diet, sixty-five, or 81 per cent, showed an average reduction in blood cholesterol of 19 per cent. The average initial value for blood cholesterol was 262 mg. per hundred cubic centimeters, and the average final value, 211 mg., showing a reduction after treatment of 51 mg., or 19 per cent (fig. 1). In the control group of twenty-one patients having hypercholesteremia, who were not treated with the low cholesterol diet, half showed a reduction in blood cholesterol. The average reduction, however, was only 12 mg., or 5 per cent (fig. 1).

With regard to the clinical results of treatment in the eighty patients who received the low cholesterol diet, 29 per cent were symptom free, 51 per cent improved and 20 per cent unimproved. Of those who were unimproved, 5 per cent were found to have stones. In some cases operation had been refused; in others operation was subsequently performed. This leaves an unexplained 15 per cent in whom there was no symptomatic improvement. In the control series of twenty-one patients who did not receive the low cholesterol diet, only 14 per cent were symptom free, 19 per cent were improved and 67 per cent were unimproved. Of those unimproved, 23 per cent had stones, leaving a balance of 44 per cent for whose lack of improvement there was no apparent reason aside from the fact that they had had no dietary management.

The thirty surgical patients treated with the low cholesterol diet after operation were found to have an average initial value for blood cholesterol of 238 mg. per hundred cubic centimeters before cholecystectomy. Of these, twenty, or 67 per cent, showed an improvement in the level of the cholesterol, the average decrease being 58 mg., or 24 per cent (chart 2). A control series of fourteen patients with hypercholesteremia preoperatively were not given the low cholesterol diet after operation. In this series 64 per cent showed a reduction in blood cholesterol after operation. The average decrease was 20 mg., or 9 per cent, approximately only a third of that in the series of patients on the low cholesterol diet.

Clinical observation of the thirty patients who were given the low cholesterol diet after operation showed 46 per cent symptom free, 33 per cent improved and 21 per cent unimproved. In the control series of fourteen patients who did not have the low cholesterol diet, 43 per cent were symptom free, 21 per cent improved and 36 per cent unimproved (chart 2). Since the clinical results in the two groups of surgical cases are somewhat inconclusive, a further study was made of the symptomatic response to the low cholesterol diet on the basis of reduction in blood cholesterol. Of the twenty patients showing a reduction in blood cholesterol, 45 per cent were symptom free, 45 per cent improved and 10 per cent unimproved. On the other hand, of the ten having no reduction in blood cholesterol only 60 per cent were improved, 40 per cent showing no clinical improvement (chart 3).

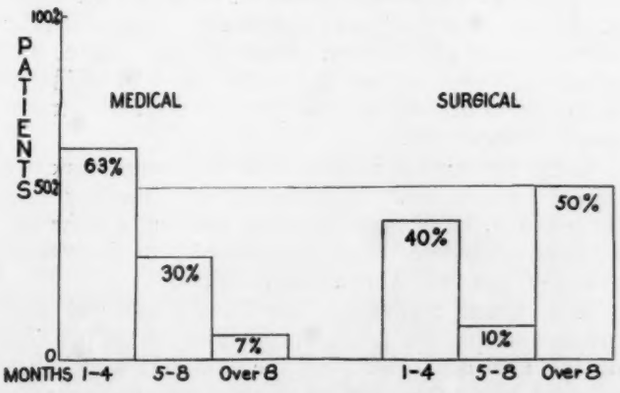

Fig. 4.—Intervals in which minimum values for blood cholesterol were obtained with a low cholesterol diet in medical and postoperative cases.

Another phase of this investigation was concerned with the interval from the institution of the low cholesterol diet until the minimum value for blood cholesterol was obtained. The maximum reduction in blood cholesterol occurred in 63 per cent of the medical cases during the first four months, in an additional 30 per cent in the next four months and in only 7 per cent after the eighth month. In contrast to this, in the surgical cases, in which the low cholesterol diet was started after cholecystectomy, the maximum reduction in blood cholesterol occurred in 40 per cent during the first four months, in 10 per cent during the next four months and in 50 per cent after the eighth month

(chart 4). Thus it is obvious that with regard to the hypercholesteremia the response to the low cholesterol diet is in most medical cases prompt, whereas after surgical intervention the response may be greatly delayed.

For further evidence of the importance of the low cholesterol diet after cholecystectomy we studied an additional series of twelve patients who had a normal value for blood cholesterol preoperatively but who had hypercholesteremia after operation. In this group the average preoperative value for blood cholesterol was 172 mg. per hundred cubic centimeters and the average maximum postoperative value 239 mg. The maximum increase in blood cholesterol occurred in half the cases within the first four months after operation; in most of the remainder, however, the maximum values were obtained after the eighth month. These observations seem to indicate the advisability of restricting the intake of fats and foods high in cholesterol for an indefinite period after cholecystectomy. The association of hypercholesteremia with symptoms following operation has previously been noted.

SUMMARY

1. A series of 110 medical and surgical patients with disease of the gallbladder and associated hypercholesteremia were treated with a low cholesterol diet. A control series of thirty-five patients did not receive this diet.

2. Of eighty medical patients 82 per cent showed an appreciable reduction in blood cholesterol; 80 per cent were symptomatically improved. Fifty per cent of the control group showed an inconsequential reduction of blood cholesterol; 33 per cent were symptomatically improved.

3. Sixty-seven per cent of the thirty surgical patients treated with the low cholesterol diet after cholecystectomy showed an average reduction in blood cholesterol of 24 per cent; 79 per cent were symptomatically improved. In the control group 65 per cent of the patients showed an average reduction in blood cholesterol of 5 per cent and 64 per cent showed symptomatic improvement.

4. Of the surgical patients who had symptoms after cholecystectomy and were treated with the low cholesterol diet, 10 per cent of those showing a reduction in blood cholesterol were unimproved. In the control group 40 per cent were unimproved.

5. Minimum readings of the blood cholesterol were obtained within the first eight months for 93 per cent of the medical patients on the low cholesterol diet, whereas after cholecystectomy minimum figures were obtained only after eight months for 50 per cent of the patients.

6. Twelve patients with gallbladder disease who had a normal value for blood cholesterol preoperatively had hypercholesteremia after cholecystectomy.

CONCLUSIONS

1. The low cholesterol diet has been found by repeated chemical analyses to reduce the blood cholesterol in cases of hypercholesteremia.

2. The low cholesterol diet gives symptomatic relief in most of these cases.

3. The diet is indicated also after cholecystectomy to preclude hypercholesteremia and recurrent symptoms.

65 East Fifty-Fifth Street—140 East Fifty-Fourth Street.

ABSTRACT OF DISCUSSION

DR. ARTHUR L. BLOOMFIELD, San Francisco: I find the paper of Dr. Twiss and Dr. Barnard interesting but difficult to discuss, because I am not entirely sure what kind of diseases they are talking about. That is true with many diseases or disorders pertaining to the biliary tract and to the gastrointestinal tract. If several physicians talk about auricular fibrillation they all know that they are dealing with exactly the same thing; but with the gallbladder, beyond biliary colic and obvious more or less acute infections, there is room for a difference of opinion as to diagnosis. It may be that some of the patients whom the authors have referred to would by others be regarded as having had some functional disorder. It is conceivable that a regimen of any sort plus psychotherapy might have led to relief of symptoms. I raise this possibility, which probably the authors will demolish, because it is difficult for me to see why reducing the cholesterol content, if that is what happens, should so promptly do away with the somewhat miscellaneous group of symptoms. I can see that if cholesterol in the bile could be reduced over a long period there might be less tendency for cholesterol to be deposited in the wall of the gallbladder or for gallstones to develop, but it is difficult for me to see why the patient should so promptly be improved. I seek to find some other explanation, and I should like to hear a more definite interpretation as to the mechanism whereby the patient is promptly relieved of his symptoms by this diet.

DR. JOHN RUSSELL TWISS, New York: In answer to Dr. Bloomfield's first question, as to why the patient shows such prompt relief of symptoms after being put on this diet, I made no statement to that effect. What I said was that the reduction in blood cholesterol occurred in 63 per cent of the patients within the first four months. I said nothing about the time required for the symptoms to disappear. However, I will say that the majority of the patients did show symptomatic relief within four months. Dr. Bloomfield would like to know on what basis we made our diagnosis. We make our diagnosis of gallbladder disease on the symptoms. The symptoms which we have found most commonly associated with such disease are those of "indigestion," by which we mean belching, distention, fear of eating, discomfort after meals, in some cases nausea and vomiting and in some cases colic and jaundice, the last-mentioned symptoms being relatively uncommon. Our second criterion for diagnosis is the appearance in roentgenograms. We made roentgenograms in every one of the cases reported. The indications of gallbladder disease were impaired visualization of the gallbladder, delayed emptying of the gallbladder, lack of visualization of the gallbladder or the presence of stones. Dr. Bloomfield would like to know why we said that the patients had gallbladder disease. In addition to the considerations previously mentioned, we had drained the biliary tract in every case. We had repeatedly examined the biliary sediment microscopically according to the method of Lyon. Furthermore, we had made bacteriologic examinations of the bile in a large proportion of cases, not only by drainage but at the time of operation. Our diagnostic criteria also included the chemical examination of the blood previously mentioned, especially the determination of the icterus index. We feel that the icterus index is a very important test, and we find that in a great many questionable cases a moderate elevation of the index, a reading between 8 and 15 (in the so-called zone of latent jaundice), is an important additional factor in making a diagnosis of disease of the gallbladder.

Number of Public Institutions for Feebleminded.—According to the latest available figures, there are now in the United States seventy-six public institutions for the feebleminded (or for both the feebleminded and the epileptic) with a total population of about 75,000. In addition there are some 113 private establishments with a combined enrolment of little more than 2,000. Altogether, these institutions accommodate less than one fifteenth of the estimated number of mental defectives in this country. Forty-four states have state institutions for the feebleminded.—Deutsch, Albert: The Mentally Ill in America, New York, Doubleday, Doran & Co., Inc., 1937.

SULFANILAMIDE AND SERUM IN THE TREATMENT AND PROPHYLAXIS OF SCARLET FEVER

WALLACE SAKO, M.D.; P. F. DWAN, M.D.
AND
E. S. PLATOU, M.D.
MINNEAPOLIS

In 1935 Domagk [1] showed that prontosil [2] had a marked protective and therapeutic value in experimental streptococcic infections in mice. This observation has been confirmed by numerous investigators. The drug also has a beneficial effect on similar infections in other animals and in man. Shortly after Domagk's discovery, Tréfouël and his co-workers [3] showed that prontosil was broken down in the tissues to triaminobenzene and para-aminobenzene sulfonamide. The latter compound was believed by them to be the effective component of prontosil. Recently numerous derivatives of the drug have been synthesized, but the estimation of the effectiveness of many of them requires further investigation.

The mode of action of sulfanilamide and its derivatives is still the subject of much conjecture. Since prontosil has little or no bactericidal action in vitro, Domagk believed that enhancement of phagocytosis of the streptococci by the leukocytes explained its beneficial effect. Levaditi and Vaisman [4] "advanced the theory that this drug interfered with capsule formation, thus rendering the streptococci susceptible to phagocytosis." This view was later questioned by the experiments of Long and Bliss.[5] Harleiss [6] and Schranz [7] speculated that an activation of the reticulo-endothelial system was the important action of the drug. Long and Bliss stated that sulfanilamide was not bactericidal in vitro. They were unable to confirm Colebrook and Kenny's [8] claim that the serums of patients treated with sulfanilamide exerted a bactericidal effect on beta hemolytic streptococci in vitro. In experimental streptococcic and Welch bacillus infections they further concluded that bacteriostasis is the main effect produced by sulfanilamide therapy. On the basis of ingenious experiments with cultures taken from bone marrow, Osgood [9] concluded that neutralization of toxins by sulfanilamide played the major role and bacteriostasis was of secondary importance.

The favorable clinical results obtained with sulfanilamide in treating hemolytic streptococcus infections make it logical to assume that similar effects might be expected from the use of this drug in the treatment of scarlet fever. The only report in the literature which seems to indicate that it is of value is by Peters and Havard,[10] who used para-benzyl-aminobenzenesulfonamide (proseptasine) and found that the incidence of complications dropped appreciably after the administration of the drug to patients with scarlet fever.

We have attempted to compare a series of 100 scarlet fever patients treated with sulfanilamide during 1937-1938 with an equal number of controls who did not receive the drug. The two series, although not composed of alternate cases, ran concurrently and were comparable with respect to age, severity and duration of disease prior to treatment. Although the criteria for evaluating our results may be subject to criticism, some observations have been made which we believe are significant and seem to suggest that sulfanilamide is of value in the treatment of scarlet fever.

The drug was administered orally except to patients with nausea or extreme toxemia. The latter were given an initial large dose subcutaneously in the form of 1 per cent solution in physiologic solution of sodium chloride. The dosage used was that recommended by Long and Bliss [11] for severe infections: an initial massive dose of 0.05 Gm. per pound of body weight and a maintenance dose of 0.03 Gm. per pound in twenty-four hours. It is our impression that, per unit of weight, children tolerate the drug better than adults. With the exception of the development of leukopenia in two cases and a fever and rash in two additional cases in which we were compelled to discontinue therapy, no serious complications were encountered with the drug. Cyanosis without sulfhemoglobinemia was observed in several instances but therapy was continued without any ill effects. The dosage was gradually decreased but was continued on an average of twelve days. Too early discontinuance of the drug was believed to be the cause of the appearance of mild complications in a few of our cases. The best results were obtained when sulfanilamide was continued during the entire convalescent period. The fever curve in the treated cases, once it became normal, remained so in practically all cases without complications, whereas the untreated cases showed irregular rise in temperature, often without demonstrable explanation for this rise.

Tables 1 and 2 illustrate the most significant observations in our comparison between sulfanilamide treated and control cases. The incidence of complications was 41 per cent in the controls as compared to 8 per cent in the treated cases. As will be noted, there were nine suppurative conditions in the control cases as compared to one in the treated series.

In our treated cases the rate of recovery from the acute toxemic phase of the disease (six days) was no more rapid than it was in the control cases (six days). The patients treated with sulfanilamide did not show the prompt subsidence of toxic symptoms such as we have observed following the administration of serum.

SERUM THERAPY IN SCARLET FEVER

During the past decade an abundance of literature has accumulated concerning the beneficial influence of commercial antitoxin and human convalescent serum on toxemia, temperature, rash and complications of scarlet fever. Differences of opinion apparently still exist as to the degree and character of action of these serums.

1. Domagk, Gerhard: Chemotherapy for Streptococcic Infections, Deutsche med. Wchnschr. **61**: 250 (Feb. 15) 1935.
2. Prontosil is the disodium salt of 4-sulfamidophenyl-2'-azo-7'-acetylamino-1'-hydroxynaphthalene-3', 6' disulfonic acid.
3. Tréfouël, J.; Tréfouël J. (Mme.); Nitti, F., and Bovet, Daniel: The Activity of Para-Amino Phenylsulfonamide on Experimental Streptococcic Infections in Mice and Rabbits, Compt. Rend. Soc. de biol. **120**: 756, 1935.
4. Levaditi, Constantin, and Vaisman, A.: Curative Action of Prontosil and Several Similiar Derivatives in Experimental Streptococcic Infection, Compt. rend. Soc. de biol. **119**: 946, 1935.
5. Bliss, Eleanor A., and Long, P. H.: Observations on the Mode of Action of Sulfanilamide, J. A. M. A. **109**: 1524-1527 (Nov. 6) 1937.
6. Harleiss, H.: Prontosil: Excerpt from Chemotherapy of Infectious Diseases, Caused by Prontozon and Bacteria, Proc. of Royal Soc. of Med. **29**: 313 (Feb.) 1936.
7. Schranz, H.: The Treatment of Sepsis with Prontosil, München. med. Wchnschr. **82**: 419 (March 14) 1935.
8. Colebrook, Leonard, and Kenny, Méave: Lancet **1**: 1279 (June 6) 1936.
9. Osgood, E. E., and Brownlee, Inez E.: Culture of Human Bone Marrow: Mode of Action of Sulfanilamide, J. A. M. A. **110**: 349-356 (Jan. 29) 1938.
10. Peters, B. A., and Havard, R. V.: Lancet **1**: 1273-1274 (May 29) 1937.
11. Long, P. H., and Bliss, Eleanor A.: The Use of Para-Aminobenzenesulfonamide or Its Derivatives in the Treatment of Infections Due to Beta Hemolytic Streptococci, Pneumonococci and Meningococci, South. M. J. **30**: 479-487 (May) 1937.

Some investigators contend that they are both purely antitoxic, whereas others believe that human convalescent serum has antibacterial properties as well.

Rhoads and Gasul [12] have shown by titration methods that twelve lots of pooled convalescent serum contained an average potency of only 500 neutralizing units of antitoxin per cubic centimeter as compared to 15,000 units per cubic centimeter in commercial antitoxin. It is obvious, therefore, that the antitoxic potency of convalescent serum was found to be only one thirtieth that of the commercial product.

TABLE 1.—*Complications in One Hundred Sulfanilamide Treated Cases of Scarlet Fever*

Condition	Cases
Otitis media (nonsuppurative)	4
Suppurative otitis media	1
Cervical adenitis (nonsuppurative)	1
Nephritis	1
Sinusitis	1
Total	8

In spite of this relatively low antitoxic titer of convalescent serum, the clinical results reported by Thalhimer, Hoyne and Levinson [13] and others following therapeutic doses of 40 cc. compared favorably with those reported by one of us [14] at about the same time, commercial antitoxin being used in doses fifteen times as large when expressed in antitoxic neutralizing units.

The two groups of cases listed in table 4 contain about the same percentage of severe types and were observed at the same time in nearby midwestern cities, although they are not identical samples. The roughly similar reduction of principal complications in the two series as compared to controls suggests the possibility that factors other than antitoxic titer may explain the results obtained with human convalescent serum.

Although massive doses of convalescent serum are required to match the antitoxic titer of commercial antitoxin, it is believed by some that such quantities of human serum are clinically much more effective than an equivalent amount of commercial antitoxin. This is offered as further evidence that convalescent serum is to some extent antibacterial, or at least that its beneficial effect is not limited to its specific antitoxic content. Our own experience with massive doses of convalescent serum in critically ill patients suggests that this is true.

Observers consistently emphasize the importance of early administration of serum, some stressing the quantitative factor in therapy, but too few have dwelt on the need for a safe, rapid dissemination of antibodies which specifically combat the peculiarly widespread toxemia seen in scarlet fever. Human convalescent serum has a great advantage over horse serum with respect to safety when either is to be used intravenously, and this method of administration would certainly seem the logical one to follow in treating this disease.

If sulfanilamide eventually justifies the promise it now gives of being adequate in the average case of scarlet fever, it will perhaps be more than ever true that serum should be reserved as an adjunct for the severe cases in which its help is especially desired.

12. Rhoads, P. S., and Gasul, B. M.: Convalescent Scarlet Fever Serum and Commercial Antitoxin, J. A. M. A. **102**: 2005-2008 (June 16) 1934.
13. Hoyne, A. L.; Levinson, S. O., and Thalhimer, William: Convalescent Scarlet Fever Serum, J. A. M. A. **105**: 783 (Sept. 7) 1935.
14. Platou, E. S.: Minnesota Med. **15**: 697 (Oct.) 1932.

PROPHYLAXIS

Essential factors determining the variability of scarlet fever are the virulence and dosage of the organisms and the resistance of the host. Epidemiologists believe that virulence is probably the least variable of these factors, and, since infectious dosage cannot be controlled, success in prophylaxis against scarlet fever must necessarily depend on one's ability to increase host resistance.

Experimental evidence suggests that small doses of convalescent serum may modify the permeability of cells and prevent the intimate parasitism usually exhibited in virus diseases. In bacterial disease, however, such a phenomenon is probably not operative, and in order to effect prophylaxis one must rely on increasing antitoxic or antibacterial properties of the blood.

It has been shown that scarlet fever convalescent serum and commercial antitoxin in large doses neutralize toxin and therefore are useful in the treatment of the disease. However, if scarlet fever convalescent serum contains quantitatively only small amounts of antibacterial substance, it follows that one must depend for prophylaxis principally on raising the antitoxic levels of the blood.

Does convalescent serum in 20 cc. dosage contain sufficient antitoxin to alter materially host resistance? If Rhoads and Gasul's titration values of 500 neutralizing units per cubic centimeter are correct, it would mean that in 20 cc. of serum only 10,000 neutralizing units is added in the attempted change of antitoxic status. These observers found that a large proportion of twenty Dick positive persons who had received from 10 to 20 cc. of convalescent serum had not become Dick negative several days later. If antitoxin alone is to be used as a criterion for immunity, it would seem from this evidence that susceptibility may not be as greatly modified by 20 cc. of serum as would be desired.

Will 20 cc. of convalescent serum prevent invasion of the body by the scarlet fever streptococcus? One of us (E. S. P.) witnessed failure to prevent such invasion in five of ten children (from 12 to 16 years of age), each of whom received 20 cc. of pooled scarlet fever convalescent serum. The five who did not contract the disease received additional chemotherapy with sulfanilamide.

TABLE 2.—*Complications in One Hundred Control Cases of Scarlet Fever*

Condition	Cases
Otitis media (nonsuppurative)	9
Suppurative otitis media	4
Cervical adenitis	6
Suppurative cervical adenitis	1
Otitis media and cervical adenitis	1
Mastoiditis	3
Mastoiditis and septicemia	1*
Nephritis	11
Arthritis	1
Sinusitis	1
Nephritis and sinusitis	1
Nephritis, suppurative otitis media, cervical adenitis	1
Arthritis and myocarditis	1
Total	41

* Patient died.

One of a group of eleven English choir boys touring this country contracted scarlet fever while in Chicago. He was immediately removed to a municipal contagious hospital and the ten remaining boys were given

20 cc. each of pooled convalescent scarlet fever serum from the Samuel Deutsche Serum Center. The subsequent course of these cases seems interesting enough to warrant detailed description.

After seven days of isolation, the ten boys were permitted to proceed to Madison, Wis., where on the eighth day after receiving serum J. C. (patient 1) was sent to a hospital with scarlet fever. On arriving in Minneapolis ten days after administration of the serum,

TABLE 3.—*Principal Complications in Cases Treated with Human Convalescent Serum as Compared to Controls*

983 Treated Cases		6,282 Controls
9.5%	Lymphadenitis	27.0%
8.8%	Purulent otitis media	13.6%
0.2%	Hemorrhagic nephritis	3.6%
18.5%	Total	44.2%

G. P. (patient 2), was taken severely ill with angina, hyperpyrexia and prostration. Because cultures taken on material from the throat showed the presence of hemolytic streptococci, he was quarantined in the Minneapolis General Hospital. A very faint erythema appeared in the axillas at the end of forty-eight hours. During his stay in the hospital, otitis media, cervical adenitis, a mild nephritis and desquamation developed.

The day after the admission of patient 2 to the hospital (eleven days after serum administration), A. C. (patient 3), who gave a history of sore throat and fever three days after administration of serum, had a typical postscarlet tongue and slight desquamation and remained culture positive during three weeks of quarantine. This boy gave no history of previous scarlet fever and is now Dick negative. K. S. (patient 4) had a sore throat and fever the same day that patient 3 was isolated but recovered promptly without a rash or complications developing and was released under observation with two negative cultures at the end of one week.

J. S. (patient 5) was taken ill with a sore throat and had a positive culture the same day as patient 4, and although no rash developed his tongue gradually assumed a "strawberry" appearance, his temperature rose intermittently to 105 F. and nephritis, renal abscess, multiple arthritis and endocarditis developed.

The remaining five boys received sulfanilamide during the ten days of isolation, and negative cultures were obtained before release. They have remained well since.

Most observers who have reported on the prophylactic merits of convalescent serum contrast the incidence of the subsequent scarlet fever complex with the average morbidity among unprotected contacts. If convalescent serum modifies the complex to the extent of preventing a rash, may it not be that erroneous conclusions on the prophylactic merits of 20 cc. of serum may result? Can one be sure that fewer cases of invasion actually result, especially when there is no previous appraisal of host resistance? Certainly frank failures with serious complications make one wonder whether 20 cc. of serum will offer much help to those most in need; namely, those who receive large bacterial dosage or those who have particularly low resistance.

Prophylactic doses of commercial antitoxin have likewise been found lacking in adequate protection against bacterial invasion. During the past several years there have been admitted to the Minneapolis General Hospital five patients with scarlet fever who have been known to have had such prophylaxis from two to twelve days previously. Two of these patients died, one from streptococcic laryngotracheobronchitis and the other from septicemia.

CHEMOPROPHYLAXIS

Most of the experimental evidence relative to the merits of sulfanilamide indicates that it has a very definite prophylactic effect. Domagk, who first demonstrated the value of prontosil, showed that it had a protective action on mice.

The finding of a throat culture positive for hemolytic streptococcus in a susceptible child exposed to the disease in a critical form prompted one of us (E. S. P.) to try sulfanilamide for protection, and the outcome was so favorable that we have used it cautiously in sixty intimate contacts to date with no failures. This number of cases is obviously too small from which to draw any conclusions. The drug cannot be recommended for routine prophylactic use until its mode of action, optimal dosage and allergic or toxic effects are more clearly understood. It is hoped that the future may possibly offer something worth while in the use of this drug perhaps as a synergistic agent complementing the action of serum.

SUMMARY

Among 100 cases of scarlet fever treated in which large doses of sulfanilamide were given complications developed in eight whereas among 100 similar cases in which the drug was not given complications occurred in forty-one.

The rate of recovery from the acute toxic phase of the disease among the sulfanilamide treated as compared to the control cases could not be said to be accelerated.

Scarlet fever toxemia has been shown to be strikingly modified by early massive doses of antitoxin contained in human convalescent serum and commercial horse serum.

Although human convalescent serum has a lower antitoxic titer per cubic centimeter than commercial antitoxin, the former has a distinct advantage with respect to safety for intravenous use.

TABLE 4.—*Principal Complications in Cases Treated with Commercial Antitoxin as Compared to Controls*

1,664 Treated Cases		2,000 Controls
3.9%	Lymphadenitis	11.7%
5.9%	Purulent otitis media	12.7%
0.8%	Hemorrhagic nephritis	3.8%
10.6%	Total	28.2%

Twenty cc. of pooled human convalescent serum failed to prevent the streptococcic invasion of scarlet fever in five of ten boys who were intimately exposed to it, whereas the five who received additional chemoprophylaxis did not contract the disease.

Commercial antitoxin in our experience has failed to protect several persons against the streptococcic invasion of scarlet fever.

Early massive intravenous serum therapy to combat toxemia combined with continued large doses of sulfanilamide seems to be the most efficacious treatment for scarlet fever.

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MEDIASTINAL INFECTION FROM ESOPHAGEAL PERFORATION

CHARLES E. PHILLIPS, M.D.

LOS ANGELES

Mediastinitis due to perforation of the esophagus has been generally considered a fatal condition.

Quotations from three representative authorities will suffice to show the expected outcome of this accident: "Rupture or perforation of the esophagus results in a mediastinal infection, which is fatal" (Broyles [1]). "If, in consequence of such injury, the mediastinum or the pleura is opened, death from infection is almost certain to occur" (Torek [2]). "The occurrence of a perforation of the esophagus is in the vast majority of cases associated with fatal consequences" (Graham, Singer and Ballon [3]).

Unfortunately these statements are true, but needlessly so. The work of Chevalier Jackson, Chevalier L. Jackson, William Lerche,[4] Herman Pearse Jr.[5] and a few others shows that a great majority of patients can be saved by surgical intervention.

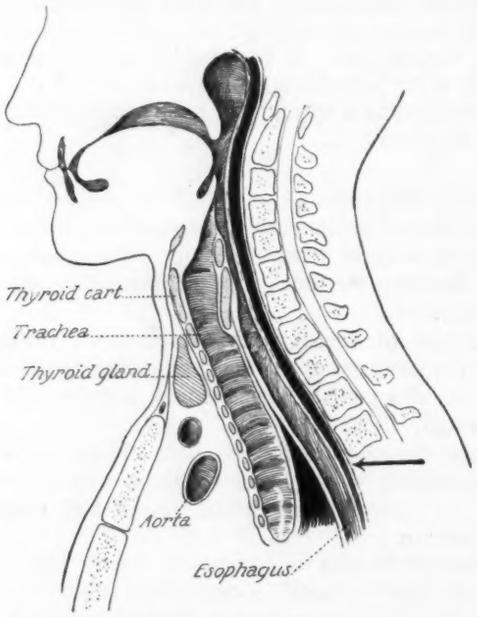


Fig. 1.—Sagittal section of the cervical and superior mediastinal spaces with narrowing of the retrovisceral space between the superior and posterior mediastinal spaces.

I desire to present my own series of twenty cases of mediastinal infection from esophageal perforation. There were in this series three deaths, all of which under different circumstances might have been prevented.

The anatomy with which this condition is particularly concerned consists of a space surrounding the esophagus and extending in continuity from the retropharyngeal space to the diaphragm. This space is filled with loose areolar tissue and shows two points of constriction. The first point is at the superior aperture of the thorax, where the parietal pleura is attached to the first rib. The second point of constriction is at the junction of the superior with the posterior mediastinal spaces, where the roots of the lung, bifurcation of the trachea and great vessels seem to form a partial barrier to the passage of infection. In only three of the twenty cases analyzed did infection travel from the superior to the posterior mediastinum, although infection readily passed from the retropharyngeal space to the superior mediastinum in a majority of the cases.

The periesophageal or mediastinal spaces are in constant motion from the surrounding pulsating vessels and moving pleura, rendering the presence of infection especially hazardous.

The wall of the esophagus is composed of mucous, submucous and muscular coats. The vulnerability of the esophagus to blunt force or to perforation by sharp objects is striking. After perforation has occurred, the constant motion of the mediastinal structures predisposes to a rapid dissemination of infection.

Perforations of the esophagus occur for the most part in its upper portion; first, because this is the most constricted section and the most exposed to traumatism; secondly, because ingested material changes its course as it enters the esophagus from the pharynx, and, finally, because the pharyngeal muscles compress the food from a globular to an elongated mass and push it from the pharynx into the esophagus, so that foreign bodies of dangerous dimensions mixed with the food are caused to protrude and perforate the esophagus. Once infection is liberated in the periesophageal spaces of the neck, the line of spread depends on the amount and virulence of the infective material.

When the infective material is relatively small it may remain localized in the neck for some time and then gradually descend into the superior mediastinum and along the great vessels in the base of the neck. This course of extension explains the lateral swelling of the base of the neck. The infection penetrated into the superior mediastinum in every case in which there was found a lateral swelling in the neck.

The diagnosis of mediastinal infection from esophageal perforation must be made promptly, and the abscess accurately localized to assure success in treatment. The diagnosis is made on the following points:

1. There is a history of injury following the ingestion of some sharp substance or of perforation during instrumentation.

2. Immediate symptoms of pain, tenderness and dysphagia are followed by fever, swelling and subcutaneous emphysema.

3. X-ray examination may show a foreign body, emphysema or irregularities of the tissues after the ingestion of an opaque meal.

4. Endoscopic examination may show gross perforations and suggestive irregularities or perforating foreign bodies.

It is only by the selective application of any or all of these measures that an early diagnosis can be attained.

The mechanism of infection is varied: (*a*) It may slowly perforate an injured mucosa and later reach the mediastinum. (*b*) A virulent infection with a minimum of trauma may set up active mediastinitis.

Read before the Section on Surgery, General and Abdominal, at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 17, 1938.

Dr. Simon Jesberg referred a majority of the patients and did the endoscopic work in localizing the lesions. Dr. Alden H. Miller assisted in assembling the records.

1. Broyles, E. N.: Oesophagus, in Lewis, Dean: Practice of Surgery, London, John Murray, 1930, vol. 4, chapter 8, p. 11.
2. Torek, Franz: Wounds of the Esophagus, in Nelson Loose-Leaf Living Surgery, New York, Thomas Nelson & Sons, 1927, vol. 4, chap. 3, p. 127.
3. Graham, E. A.; Singer, J. J., and Ballon, H. C.: Surgical Diseases of the Chest, Philadelphia, Lea & Febiger, 1935.
4. Lerche, William: Mediastinal Infections, in Lewis, Dean: Practice of Surgery, London, John Murray, 1930, vol. 4, chapter 12; Suppurations in the Posterior Mediastinum, Arch. Surg. **8**: 247 (Jan.) 1924.
5. Pearse, Herman E., Jr.: The Operation for Perforation of the Cervical Esophagus, Surg. Gynec. & Obst. **56**: 192 (Feb.) 1933.

(*c*) A minute perforation may remain walled off from the mediastinum until the opening into the esophagus closes and then a fulminating mediastinitis result. (*d*) A wide opening in the mediastinum leads to rapidly spreading emphysema and mediastinitis.

Accidents and complications due to unforeseen conditions arose in several cases of this series. The penetration of infection into the great blood vessels, resulting in septicemia, constituted the chief threat to life. None of the patients treated within the first twenty-four hours after perforation succumbed to infection. Serious secondary hemorrhage occurred in two cases, 7 and 17. One patient recovered and the other died. Patient 7 suffered a slough of his internal jugular vein from the pressure of the Dakin tubes but recovered. Patient 17 sloughed a section of her esophagus and promptly died of hemorrhage. In case 9 the thoracic duct was injured but recovery ensued. The second death, in case 11, resulted from a double pneumothorax. The third death, in case 20, was a result of infection. The patient refused operation until two days had elapsed after perforation, and he died of spreading infection.

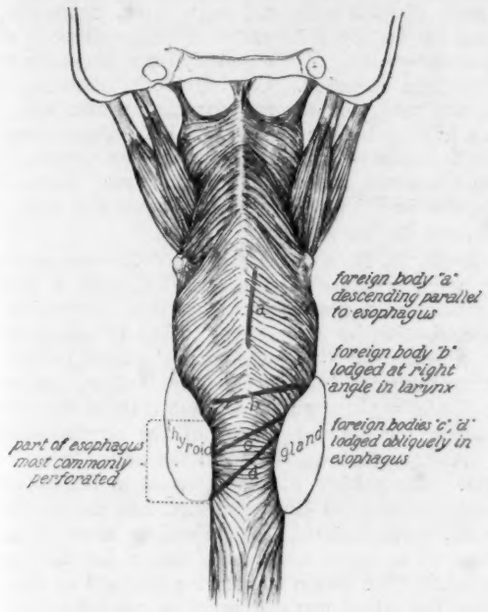

foreign body "a" descending parallel to esophagus
foreign body "b" lodged at right angle in larynx
foreign bodies "c", "d" lodged obliquely in esophagus
part of esophagus most commonly perforated
thyroid
gland

Fig. 2.—Retropharyngo-esophageal surfaces, showing four hypothetic foreign bodies: "*a*" will be swallowed safely; "*b*" will lodge and probably be regurgitated without damage and "*c*" and "*d*" may lead to perforation with attempts to force them down the gullet.

Surgical treatment has for its objectives:

1. Localization of the lesion.
2. Surgical approach and evacuation of the abscess.
3. Release of pressure.
4. Sterilization of the abscess cavity by diluted solution of sodium hypochlorite.
5. Continued disinfection until healing is complete.

Infection in the retropharyngeal and superior mediastinal spaces is treated by a surgical approach through an incision along the anterior border of the sternocleidomastoid muscle. The muscles are separated, and the lower pole of the thyroid is elevated. This affords an easy access to the periesophageal and the superior mediastinal spaces.

It is important that the parietal pleura be uninjured in the approach to the superior mediastinum. Perforation of the pleura usually leads to disaster. The normal expansion and contraction of the esophagus in swallowing represents the amount of available space that can be utilized with safety in entering the mediastinum. The space will not always admit the finger without possible injury to the pleura, but it will accommodate about three Dakin tubes on each side of the esophagus without undue pressure on the pleura. The Dakin tubes, with lateral openings, are inserted into the superior mediastinum. It is essential that the tubes be kept free and open, so that they may function as drainage as well as irrigation tubes. The motion of the mediastinal structures forces out the solution soon after it is injected and disinfection of the mediastinum is effected. The irrigation should be done every two hours until the infection subsides. Thereafter it is repeated twice daily as the tubes are gradually removed. By a gradual shortening of the tubes, the mediastinal cavity is made to close from the bottom. The average acute mediastinitis clears up within ten days or two weeks and is healed completely in another week.

When the infection is in the posterior mediastinum the surgical attack should be made from the dorsum. After localization of the perforation, the resection of 2 inches of the posterior end of two ribs below the point of perforation and displacement of the pleura outward will afford access to the posterior mediastinum. It is to be well noted that the thoracic duct is exposed to injury when the left side is opened.

When the barium sulfate used for the visualization of the perforation is encountered, the Dakin tubes are placed and the wound closed to the tubes. In all cases of mediastinitis a feeding tube is passed through the nose and down the esophagus. It is left in situ until the esophagus is healed. Usually it can be discarded at the end of ten days, provided no further leakage takes place through the perforation.

CONCLUSIONS

When the perforation is recognized immediately and proper treatment instituted without delay, recovery is reasonably assured.

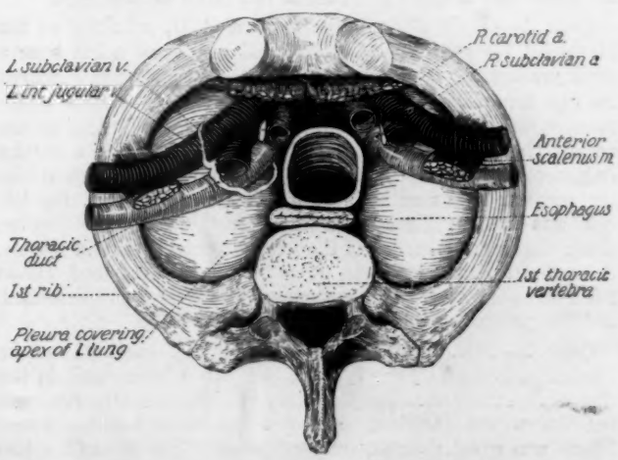


Fig. 3.—The superior aperture of the thorax, showing the relations of the pleura and esophagus.

Septic mediastinitis from perforation of the esophagus is a curable condition. The essentials of success are early diagnosis, the services of a skilful endoscopist and radiologist and a surgeon with the ability to use regional anesthesia and diluted solution of sodium hypochlorite. In this series early operation would have saved at least two of the three patients who died.

REPORT OF CASES

CASE 1.—Mrs. C. H. F., white, aged 40, who was admitted to the Methodist Hospital Aug. 20, 1919, complaining of pain in the throat, inability to swallow, swelling of the right supraclavicular region and symptoms of sepsis, said that four days previously, while she was eating chicken, a piece of rib had stuck in her throat. There were increasing pain and fever, and for the preceding twenty-four hours she had noticed swelling

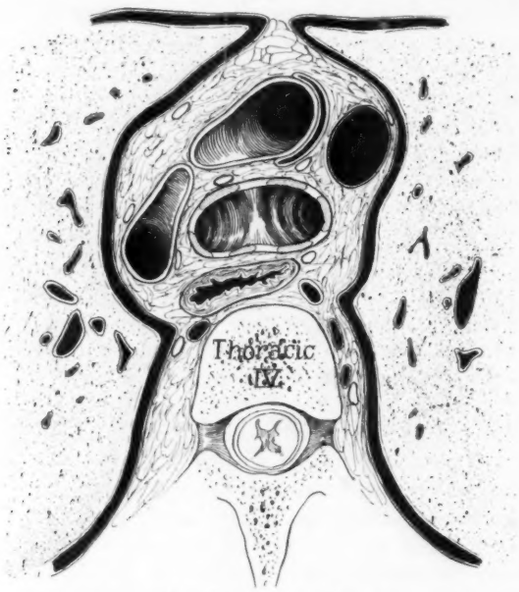


Fig. 4.—Lower boundary of the superior mediastinum, where a descending infection is usually arrested.

of the right supraclavicular region. She called Dr. Simon Jesberg, who located a bone which was perforating the esophagus 3 inches below the hyoid bone. He removed it through the endoscope and referred the patient for surgical drainage. With the patient under general anesthesia the neck was opened through an incision along the anterior border of the right sternocleidomastoid muscle. The mediastinum was entered under the right lobe of the thyroid. An abscess was found surrounding the esophagus and extending into the superior mediastinum. Dakin tubes were inserted and irrigations carried out every two hours. The patient recovered in nine days.

CASE 2.—H. E. B., a white man aged 27, admitted to the Methodist Hospital May 22, 1923, had swallowed a fish bone a week previously. The throat was quite sore and then improved for two days, after which there was a marked increase of symptoms, with inability to swallow, fever, and tenderness of the neck. The patient consulted Dr. Jesberg, who made a careful endoscopic examination, with negative results, and referred him for surgical treatment. Cervical block anesthesia on the left side was used, and the neck was opened through an incision along the anterior border of the left sternocleidomastoid muscle. A mediastinal abscess was found and evacuated, and Dakin tubes were inserted. The postoperative course was uneventful, and the patient was discharged as cured June 13.

CASE 3.—Mrs. J. J. H., white, aged 53, admitted to the Methodist Hospital June 7, 1926, had had a bone catch in her throat about six months previously. The bone was removed, but the throat remained sore and gradually became worse. There was great difficulty in swallowing. She suffered a loss in weight of 30 pounds (13.6 Kg.). She consulted Dr. Jesberg, who made an endoscopic examination, finding an inflammatory mass obstructing the esophagus and also a tracheo-esophageal fistula. He was unable to pass the endoscope. Barium sulfate was given, and x-ray examination by Dr. W. B. Bowman showed almost total occlusion of the esophagus. The barium mixture flowed into the trachea. A preliminary gastrostomy was done with local anesthesia, and then, with the patient under general anesthesia, an incision was made along the anterior border of the left sternocleidomastoid muscle. A large abscess was found in the superior mediastinum, communicating with the tracheo-esophageal fistula. Dakin and drainage tubes were inserted. The patient was fed through the gastrostomy opening, and Dakin's treatment was instituted, care being used on account of the tracheal fistula. The patient made a complete recovery.

CASE 4.—Mrs. L. A., white, aged 59, was admitted to the Hollywood Hospital July 29, 1928. About six weeks previously a bone had lodged in her throat and she had gone to the Ear and Eye Hospital, where Dr. Jesberg removed it through an endoscope. She was greatly improved and went home after a few days. The throat remained sore, and a few days before her admission to the Hollywood Hospital there was a sudden exacerbation of pain associated with fever, hoarseness, dysphagia and respiratory embarrassment and swelling in the left supraclavicular region. The urgency of the symptoms necessitated immediate operation. Cervical block anesthesia on the left side was used, and the superior mediastinum was opened through a left-sided collar incision. A large abscess was found extending from the neck into the superior mediastinum. Dakin tubes were inserted, and cultures were taken. These showed gram-negative bacilli and cocci. On August 6 a large slough came out, and healing followed.

CASE 5.—H. B. R., a white man aged 36, was admitted to the Eye and Ear Hospital May 12, 1932, with a history of having swallowed a chicken bone that day. Immediate endoscopic examination by Dr. Jesberg failed to show the bone. On the following day there was marked swelling of the neck and a temperature of 101 F. On May 14 operation was performed. Under regional anesthesia both sides of the neck were opened along the anterior border of the sternocleidomastoid muscle. A large rent was found in the posterior wall of the esophagus. The chicken bone was found in the prevertebral space, and the infection had penetrated into the mediastinum. Dakin tubes were inserted, and irrigations were given every two hours. The temperature remained up for six days and then subsided. The Dakin tubes were removed at the end of a week and the patient was discharged as cured after nine days.

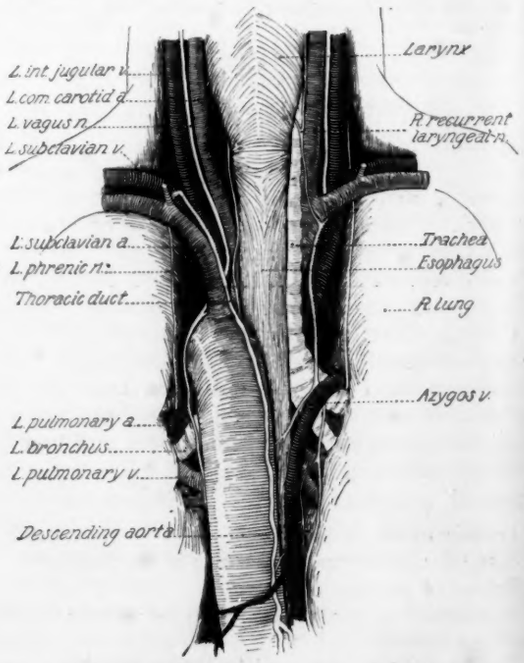


Fig. 5.—The relations of the esophagus and mediastinal structures.

CASE 6.—M. G., an elderly, white, insane woman, while in an asylum, on March 18, 1928, broke her false teeth and attempted to swallow them. She was transferred to the Eye and Ear Hospital, where an endoscopic examination was attempted by Dr. Jesberg, but so much respiratory embarrassment resulted that the attempt was discontinued. The patient's condition remained precarious until March 30, when a mediastinotomy on the left side was performed. Much pus and barium sulfate were found. Drains and Dakin tubes were inserted, and no further exploration was attempted. On April 5 an exacerbation

of symptoms, with the temperature up to 102 F., necessitated further exploration. A foreign body was found surrounded by much necrotic material. The Dakin tubes were replaced and irrigations were resumed. The physical recovery was uneventful.

CASE 7.—A white man aged 35, on July 11, 1933, while eating had a bone stick in his throat. He entered the Eye and Ear Hospital, where Dr. Jesberg removed the bone through an

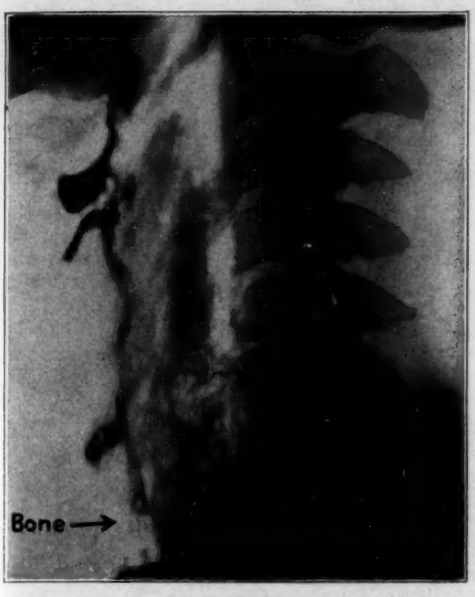


Fig. 6 (case 7).—Emphysema of the neck and a bone, indicated by arrow, in the esophagus.

endoscope. By the next morning there was such emphysema of the tissues of the neck and face that the eyes could not be opened and a usually prominent nose was represented as a dimple in the swollen face. Barium sulfate and roentgenograms showed the barium preparation in the mediastinum and the tissues filled with air (figs. 6 and 7). Under block anesthesia the mediastinum was opened through an incision along the anterior border of the right sternocleidomastoid muscle. There was so much distortion of the tissues by the emphysema that the mediastinum was opened inadvertently from the outer rather than from the mesial side of the carotid sheath. When the air escaped from the tissues, it was found that the internal jugular vein was exposed along the mesial side of the incision and was in contact with the Dakin tubes placed in the mediastinum. Dakin's treatment was carried out every two hours. On the second night the pressure of the tubes caused a rupture of the internal jugular vein. The patient coughed and lost a half pint of blood from the incision in the neck. The nurse found that pressure on the neck controlled the hemorrhage. An emergency operation with regional anesthesia was done, the internal jugular was tied and the tubes were placed through an incision made on the mesial side of the vessels on the opposite side of the neck. A transfusion of blood was necessary. The patient had a stormy convalescence but recovered within two months.

CASE 8.—R. W., a white man aged 41, swallowed a chicken bone July 4, 1934. The bone was removed through the endoscope by Dr. Jesberg July 6. Symptoms improved until July 11, when there was an increase of pain and the neck began to swell. The temperature went to 101 F. An x-ray examination July 17 showed a widening of the prevertebral space. July 19 the neck was opened and an abscess was found extending into the superior mediastinum. Dakin's treatment was instituted. The convalescence was uneventful and the patient was discharged as cured Aug. 28, 1934.

CASE 9.—F. E., a white youth aged 17, swallowed lye in infancy. He had been under treatment in the Jesberg clinic for many years, reporting at intervals for dilation of a stricture of the esophagus. Aug. 8, 1934, during an attempt to pass the dilator, the esophagus was perforated into the posterior mediastinum, just below the roots of the lungs. A roentgenogram made after the administration of barium sulfate showed the defect (fig. 8). Immediate operation was performed. With the patient under general anesthesia 2 inches of the posterior ends of the left ninth and tenth ribs were resected. The pleura was displaced outward and the mediastinum was entered. The perforation was identified by the extravasated barium preparation. Drains and Dakin tubes were inserted. The next morning the wound was filled with chyle, showing an injury to the thoracic duct. This leakage stopped after twenty-four hours. A few days later it was found that the infection had penetrated between the upper and lower lobes of the left lung. A localized empyema was drained in the axillary line. The patient made an uninterrupted recovery.

CASE 10.—M. C., aged 1 year, the only patient to recover without operation, swallowed some ornaments from a Christmas tree Dec. 25, 1934. He began to expectorate bloody mucus and to cry when swallowing. Esophagoscopic examination the following day showed esophageal lacerations, with a piece of glass in one. December 27 the temperature was 104 F. and x-ray examination showed the chest clear; the results of esophagoscopic examination were negative. January 8 a second roentgenogram with barium sulfate showed an abscess at the level of the second rib and another at the level of the eighth rib. The former abscess extended upward for 2 inches and communicated with the esophagus at both ends. Much pus was ejected from the nose and mouth, the temperature was 104 F. for two weeks, and then recovery took place without intervention. This case seems to show that the superior and posterior spaces have a free communication in childhood. It also shows that an occasional patient may recover without surgical intervention.

CASE 11.—A. W., a white woman aged 38, on March 30, 1935, swallowed a loose denture, which lodged in the throat. At endoscopic examination Dr. Jesberg saw the denture penetrating the esophagus and extending into the superior mediastinum

Fig. 7 (case 7).—Barium sulfate in the superior mediastinum.

at the level of the second rib. He was unable to remove or cut it. The patient, with rapidly spreading emphysema, was transferred to the Los Angeles County Hospital, where she was operated on, the following day. The mediastinum was opened through the anterior border of the right sternocleidomastoid muscle. The denture was located between the esophagus and the trachea at the level of the third dorsal vertebra. Removal was accomplished after disarticulation of the inner

end of the clavicle. The clavicle was replaced, and Dakin tubes were inserted and irrigations started. The patient died on the following day from double pneumothorax. Death might have been prevented by a timely aspiration of the air from the pleural cavities.

CASE 12.—D. G. Mc., a white man aged 46, admitted to the Los Angeles County Hospital Aug. 7, 1935, had a history of a slight injury to the esophagus followed by cough, fever and

Fig. 8 (case 9).—A stricture of the esophagus due to lye; rupture into the posterior mediastinum.

dysphagia. On August 14 examination seemed to show a mediastinal infection. Under regional anesthesia the left side of the neck was opened and an abscess was found extending down into the mediastinum. Dakin tubes were inserted and irrigations carried out until apparent cure had been effected. Jan. 8, 1936, the symptoms recurred. A roentgenogram taken after an injection into the esophagus of iodized poppyseed oil showed the oil passing into the mediastinum at the tenth dorsal vertebra. There was considerable pulmonary involvement in both lower lobes. Before the study was completed there was a rupture of an abscess into a bronchus (fig. 9). The patient then made a good recovery. Haste in removing the tubes after the first operation resulted in a residual abscess, which gravitated into the posterior mediastinum and then ruptured into a bronchus.

CASE 13.—L. D., a white man aged 35, on Aug. 28, 1935, suffered an abscess of his left second molar. An incision and drainage were followed by swelling of the left side of the neck. September 12 a second operation showed an abscess in the left side of the neck, extending along the carotid sheath and down into the superior mediastinum. Five Dakin tubes were inserted into the abscess cavity and irrigations carried out. Rapid healing took place and an apparent cure within two weeks. Within six weeks the patient suffered a relapse and had a septic temperature, which went to 103 F., with pain and cough. The incision in the neck was reopened, and an abscess was found in the anterior mediastinum, extending down behind the sternum. The infection spread and resulted in osteomyelitis of the sternum. Another operation, December 12, with removal of the necrotic portion of the sternum and with multiple openings left resulted in a cure by March 1936.

CASE 14.—M. D., a white woman aged 32, admitted to the Eye and Ear Hospital Jan. 11, 1936, had a history of a streptococcic sore throat for five days, a temperature of 105 F. and a leukocyte count of 18,000. There was marked swelling of the left hypopharynx, as well as swelling of the left supraclavicular region. Dr. Jesberg opened the neck through the direct laryngoscope, and later the mediastinum was opened through an approach in front of the left sternocleidomastoid muscle. Dakin tubes were inserted and irrigations carried out. Prompt recovery resulted.

CASE 15.—M. C., a white woman aged 50, admitted to the Los Angeles County Hospital Feb. 13, 1936, suffering from retropharyngeal abscess, was very toxic, had a temperature of 104.8 F., a rapid pulse, dysphagia, cough and profuse expectoration. The abscess was opened through the pharynx by Dr. Goodsel. So much pus came out that he injected the abscess with iodized poppyseed oil and later had a roentgenogram made (fig. 10), which showed the oil passing down the left retropharyngeal space into the mediastinum. It then passed over to the right side, where it entered the bronchus of the upper lobe of the right lung. March 13, 1936, under field block anesthesia, the right side of the mediastinum was opened through an incision along the anterior border of the right sternocleidomastoid muscle. The abscess was encountered at the level of the second dorsal vertebra. Dakin tubes were inserted and instillations were started, great care being used because of the bronchial fistula. Within a few days the bronchial fistula closed and the irrigations were carried out more efficiently. The temperature became normal within eight days. The patient was discharged as cured nine days after operation.

CASE 16.—M. R., a white woman aged 60, swallowed a chicken bone March 4, 1935. She suffered pain, fever and dysphagia, which gradually increased until March 10, when she was admitted to the Los Angeles County Hospital. Roentgenograms showed the bone posterior to the esophagus at the level of the sixth cervical vertebra. Her symptoms became so urgent that an emergency tracheotomy was performed by Dr. Goodsel. On the following day, under regional anesthesia, the left side of the neck was opened and an abscess was found extending down into the superior mediastinum. Dakin tubes were inserted and irrigations were carried out regularly. The patient recovered in thirty days.

CASE 17.—A. Mc. G., a white woman aged 22, swallowed a partial denture Sept. 22, 1936. It consisted of several teeth attached to a brace. She was treated in a quack hospital, where irreparable damage was done before the attempt at removal was abandoned; she was then transferred to the Los Angeles County Hospital. On her admission, September 23, the temperature was 102 F., the pulse rate 100 and the respiratory rate 24. Immediately, under regional anesthesia, the superior mediastinum

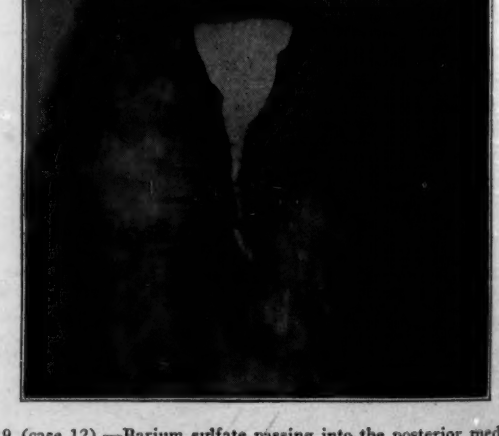


Fig. 9 (case 12).—Barium sulfate passing into the posterior mediastinum and rupturing into the bronchus.

was opened, and it was found filled with foul pus. Dakin tubes were inserted and the wound partially closed. Irrigations were carried out every two hours. Improvement took place, and the patient was apparently on the road to recovery. On the eighth postoperative day there was a sudden hemorrhage and she died. Autopsy showed that the esophagus and trachea had been terribly lacerated by the attempts to remove the denture and that sloughing of the esophagus had taken place, with fatal hemorrhage.

CASE 18.—M. O., a white woman aged 52, on June 26, 1937, while eating toast with jam, felt pain in the throat and found that the throat was bleeding. Pain in the neck and emphysema rapidly developed. She entered the Eye and Ear Hospital within a few hours. An endoscopic examination showed lacerations of the upper part of the esophagus, mostly on the right side. An anteroposterior roentgenogram showed nothing, but a lateral view showed a curved piece of glass, evidently a chip

Fig. 10 (case 15).—Mediastinal abscess rupturing into the bronchus; injection of iodized poppyseed oil.

off the jam jar, lying in the prevertebral space (fig. 11). On the anteroposterior view, the glass was superimposed on the vertebra and was not visible. As the amount of tenderness was more on the left side, it was elected to explore that side. Under regional anesthesia the neck was opened on the left side and the piece of glass was found. The point of greatest tenderness was an accurate guide to the location of the glass. Dakin tubes were inserted and the irrigations were repeated every two hours. The patient made a rapid recovery and was able to leave the hospital within ten days.

CASE 19.—R. N., a white woman aged 69, was admitted to the Los Angeles County Hospital Aug. 31, 1937, for esophagoscopic examination. On the day following the instrumentation there were swelling of the left side of the neck, dysphagia and pain in the chest and in the interscapular region. The examination was repeated and an abscess was seen in the esophageal wall. This was opened through the endoscope and a large amount of pus was evacuated. The abscess recurred, the neck became swollen and the patient became dyspneic and cyanotic. On September 10 the neck was opened along the anterior border of the left sternocleidomastoid muscle and a large abscess was found extending into the mediastinum. Dakin tubes and drains were inserted and irrigations were carried out. The patient needed oxygen for the first twelve hours and then went on to recovery. Complete healing occurred in six weeks.

CASE 20.—S. R., a white man aged 37, on Jan. 14, 1937, was treated in the clinic for cardiospasm. Difficulty was encountered in passing the dilator. The patient went home after the instrumentation, complaining of pain, soreness and dysphagia. He was admitted to the Cedars of Lebanon Hospital when swelling, emphysema and fever were found. An x-ray examination, following the taking of a barium mixture, revealed a defect in the posterior wall of the cervical part of the esophagus. An operation was advised and refused. Two days later, with increasing sepsis, he consented to operation. Under regional anesthesia the left side of the neck was opened along the anterior border of the sternocleidomastoid muscle and an abscess was encountered. No further exploration was done, but Dakin tubes were inserted and irrigations were started. The patient died of septicemia two days later. His death was attributed to refusal of early operation.

2007 Wilshire Boulevard.

ABSTRACT OF DISCUSSION

DR. SIMON JESBERG, Los Angeles: To the uninitiated, it would seem that to pass an esophagoscope is a simple matter. From all the endoscopic experience at the Eye and Ear Hospital there is no case on record in which the respiratory tract was ruptured by instrumentation. Dr. Phillips has reported twenty of our cases in which he operated. We have many more in which for some reason operation was not performed. The esophagus is a very weak viscus. Its walls are thin and it is highly intolerant of insult. From this report one would think that an endoscopist never does anything but poke holes in the esophagus. This series, however, is the concentration of well over 5,000 cases of esophagoscopy. In the case of the esophageal rupture Dr. Phillips is a little optimistic and willing to give the endoscopist a break. As a matter of fact, few foreign bodies will rupture the esophagus spontaneously. It is only when instrumentation is performed that rupture occurs. Blind instrumentation, such as the passing of a stomach tube with the idea of passing the foreign body on into the stomach, is absolutely to be condemned. I have seen several cases in which a comparatively harmless foreign body was pushed clear through the esophagus into the mediastinum. Rupture is one of the hazards of instrumentation in the removal of foreign bodies, and from a medicolegal standpoint there should be a definite understanding when passing of the esophagoscope is begun. The patient must understand that the procedure is not a simple little thing, like picking a splinter from a finger. That is often the patient's conception; because he got the foreign body so easily he expects it to come out easily. Unless there is some understanding with the patient, few endoscopists care to take the risk involved. They know, however, that they can still offer the patient a fair chance to recover should this

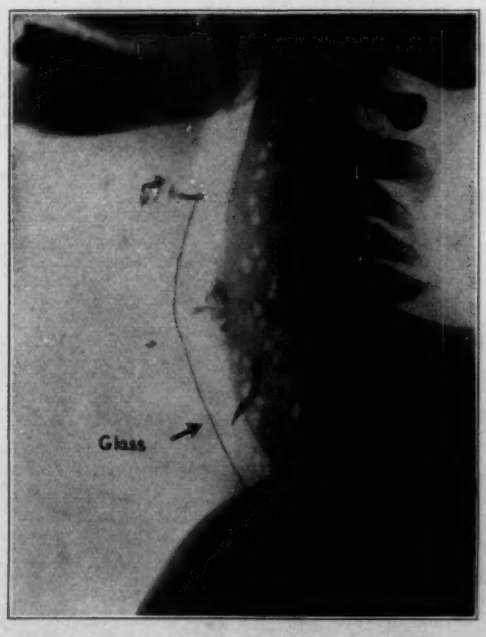


Fig. 11 (case 18).—A piece of glass, indicated by arrow, perforating the esophagus and emphysema in the prevertebral space.

catastrophe occur. An impacted foreign body such as a bone in the esophagus may defy removal without rupture, or it may cause a rupture and the physician not know it. Of course it is easy to tear the esophagus without a foreign body being present, by forcing the tube when the position is not proper. How does the endoscopist know that he has ruptured the esophagus? If the rupture is of any size, an immediate emphysema will show in the neck. When such an emphysema occurs he can be almost certain that he has ruptured the esophagus.

The patient must be watched carefully. Not all require opening of the mediastinum. However, as soon as it is obvious that there is a leak through into the mediastinum, drainage should be instituted; one should not wait for actual sepsis in the mediastinum. In connection with the child who swallowed fragments of glass Christmas tree ornaments, this child did not recover spontaneously; he recovered because, in the search for small glass fragments in the esophagus, the mediastinal abscess was inadvertently ruptured into the esophagus and drainage thereby provided.

DR. CHARLES E. PHILLIPS, Los Angeles: This subject should be taken seriously, and patients should be given a real chance for recovery. Infection in the mediastinum is not a fatal condition unless it is allowed to remain untreated.

TRUE AURICULAR FIBRILLATION COMPARED WITH MUSCLE TREMORS OF POLIOMYELITIS

JAMES E. CARROLL, M.D.
HARTFORD, CONN.

Somatic muscle tremors are of an intrinsic origin and will complicate auricular fibrillation. Lewis stated that "when a somatic muscle tremor is coarse, the curves present difficulties with doubt as to whether a given series of oscillations are of somatic or cardiac origin." Two cases illustrating comparative analyses are presented to show the apparent similar electrocardiographic tracings in two divergent clinical manifestations such as (1) auricular fibrillation and (2) poliomyelitis with subjective somatic tremors simulating auricular fibrillation. Brief introductory remarks will be made regarding auricular fibrillation and complicating artefacts intrinsically.

The absolute factor or factors are many in auricular fibrillation without any specificity. That the condition arises paroxysmally or permanently is conclusively shown by the predominance of literature on the subject and by the experiences of all physicians in every medical field. Lewis,[1] Luten and Jeffreys,[2] Brill,[3] Friedlander and Levine,[4] Smith,[5] Fowler and Baldridge,[6] Yater,[7] Frothingham,[8] Evans,[9] Parkinson and Campbell,[10] White,[11] Stroud[12] and Pardee,[13] along with innumerable other prominent workers, have found auricular fibrillation to exist with such conditions as rheumatic heart disease, arteriosclerosis and hypertensive vascular disease, acute coronary thrombosis, thyrotoxicosis, chemical poisoning, alcoholism, infectious fevers, postoperatively and in congestive heart failure, the last named adding to the gravity of auricular fibrillation and, conversely, a persistent auricular fibrillation ultimately resulting in heart failure. Basically, auricular fibrillation is a mode of action of the auricles in which the fibers contract incoordinately. This obviously causes the ventricles to respond irregularly, as many impulses reach the ventricle at variable intervals. This auricular disturbance is accountable for approximately 50 per cent of the cardiac arrhythmias.

1. In auricular fibrillation there is an absence of a P wave preceding each ventricular wave. 2. In the interval between ventricular responses there are continual fine wavelets varying in height, width and rate. 3. The wavelets are more prominent in mitral stenosis. 4. A fast ventricular rate may obscure such oscillations. 5. The T wave is deformed if prominent. 6. Standard, precordial or esophageal leads can be used for the detection of such an arrhythmia.

One is familiar with the fact that in poliomyelitis, following an acute attack, the patient is left with a

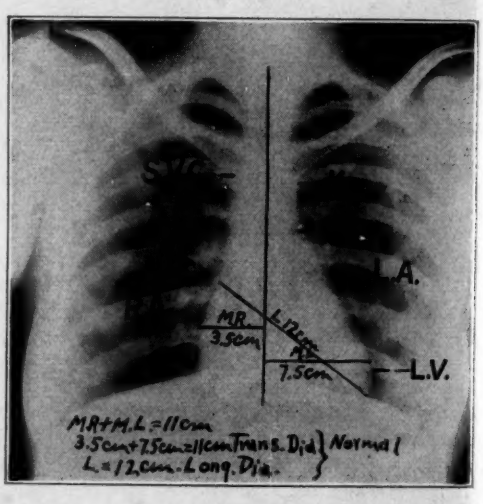


Fig. 1 (case 1).—Poliomyelitis. The heart is normal. *R. A.*, right auricle; *A. A.*, ascending aorta; *K.*, aortic knob; *L. A.*, left auricular appendix; *L. V.*, left ventricle; *S. V. C.*, superior vena cava; *P.*, pulmonic curve.

weakened musculature. Wagoner[14] shows that the following muscles are involved in the lower extremities: hamstrings, tibialis anticus, peroneals, gastrocnemius and soleus. In the upper extremities the deltoid and brachial muscles are involved. If the vagus is involved there is hoarseness of the voice or loss of voice.

Carter[15] has mentioned artefacts of an intrinsic nature occurring from muscular tension, tremor or tic, voluntary muscular contractions and high resistance of the skin.

In case 1 these factors relative to the associate causes of auricular fibrillation are absent. On the contrary, the evidence presented tends to establish the fact that, apart from the fibrillation, the heart is normal.

CASE 1.—*History.*—A. H., a woman, aged 22, a school teacher, complained of a throbbing sensation over the right side of the neck Oct. 23, 1936, of one week's duration. At 2½ years of age she had infantile paralysis which left both legs paralyzed;

1. Lewis, Thomas: Clinical Electrocardiography, ed. 5, London, Shaw and Sons, 1931, p. 93; Diseases of the Heart, New York, Macmillan Company, 1934, pp. 81-91.
2. Luten, Drew, and Jeffreys, E. O.: The Clinical Significance of Auricular Fibrillation, J. A. M. A. **107**: 2099-2102 (Dec. 26) 1936.
3. Brill, I. C.: Auricular Fibrillation with Congestive Heart Failure and No Other Evidence of Organic Heart Disease, Am. Heart J. **13**: 175-182 (Feb.) 1937.
4. Friedlander, R. D., and Levine, S.: Auricular Fibrillation and Flutter with Evidence of Organic Heart Disease, New England J. Med. **211**: 624-629 (Oct. 4) 1934.
5. Smith, H. L.: Auricular Fibrillation: Mechanism, Significance, Incidence and Treatment, M. Clin. North America **19**: 511-515 (Sept.) 1935.
6. Fowler, W. M., and Baldridge, C. W.: Auricular Fibrillation as the Only Manifestations of Heart Disease, Am. Heart J. **6**: 183 (Dec.) 1930.
7. Yater, W. M.: Pathologic Changes in Auricular Fibrillation and in Allied Arrhythmias, Arch. Int. Med. **43**: 808 (June) 1929.
8. Frothingham, Channing: The Auricles in Cases of Auricular Fibrillation, Arch. Int. Med. **36**: 437 (Sept.) 1925.
9. Evans, W. A., Jr.: Long Standing Cases of Auricular Fibrillation with Organic Heart Disease: Some Clinical Considerations, Ann. Int. Med. **9**: 1171 (March) 1936.
10. Parkinson, John, and Campbell, Maurice: Paroxysmal Auricular Fibrillation: A Record of 200 Patients, Quart. J. Med. **23**: 67 (Oct.) 1930.
11. White, P. D.: Heart Disease, New York, Macmillan Company, 1937, p. 738.
12. Stroud, W. D.; LaPlace, L. B., and Reisinger, J. A.: The Etiology, Prognosis and Treatment of Auricular Fibrillation, Am. J. M. Sc. **183**: 48 (Jan.) 1932.
13. Pardee, H. E. B.: Clinical Aspects of the Electrocardiogram, ed. 3, New York, Paul B. Hoeber, Inc., 1933, pp. 157-163 and 176-178.
14. Wagoner, G.: The Nonsurgical Orthopedic Treatment of Anterior Poliomyelitis, M. Clin. North America **18**: 51-61 (July) 1934.
15. Carter, J. B.: The Fundamentals of Electrocardiographic Interpretation, Springfield, Ill., Charles C. Thomas, 1937, p. 30.

now the right leg is flaccid and limp, necessitating a brace for the entire extremity. The left leg is now much larger and healthier in appearance than the right but not normal. At 7 years she had diphtheria, and during the last five years she had one attack of tonsillitis. The teeth are good. The tonsils are buried and unhealthy. There were no abnormalities over the region of which she complained. Her voice was somewhat hoarse. Auscultation revealed a heart rate of 74 beats to the minute, of fair quality, and there were no murmurs. The lungs

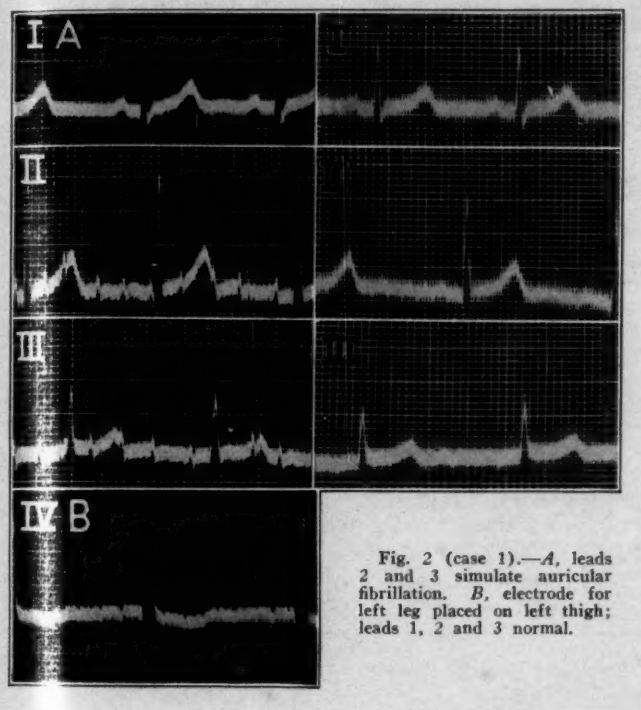


Fig. 2 (case 1).—*A*, leads 2 and 3 simulate auricular fibrillation. *B*, electrode for left leg placed on left thigh; leads 1, 2 and 3 normal.

showed slight congestion. The knee jerks were absent. The lower extremities were as already described, the right being decidedly flaccid and the left, on close examination, objectively slightly abnormal.

Fluoroscopy.—The lung fields lighted up well. There were a few scattered shadows in the regions of both hili. The diaphragm excursions were normal. The heart was medially placed and appeared normal in size. The movement of the heart from the aortic knob downward through the ventricles was a regular seesaw motion. The pulmonic curve appeared normal. The curve of the left border was convex. The lower curve of the right border was contracting very mildly inward concomitantly with the pulsations of the left auricular border. A normal condition was disclosed.

Roentgen Examination.—The transverse diameter of the medial right (3.5 cm.) plus that of the medial left (7.5 cm.) equals 11 cm. The longitudinal diameter equals 12 cm. These measurements for the patient's weight and height are normal as adopted by Polevski [16] (fig. 1).

A standard electrocardiogram was taken. The patient's brace was removed and left off during all subsequent tracings. The electrocardiograms were taken by the standard orthodox accepted method of Einthoven. With the electrodes in place on the right arm, left arm and left leg, and all attached to the galvanometer, a millivolt caused an excursion of 1 cm. of the string. This standardization applied throughout to all leads. The result showed the first lead to be normal except for an irregular spacing of the ventricular complexes (sinus arrhythmia), with the ventricular rate varying from 50 to 70 beats a minute. The second and third leads resembled those of auricular fibrillation. The "fibrillation" waves were visible in diastole, and also in the T waves with an absence of P waves (fig. 2). These tracings were checked and obtained each time. Then I sandwiched the patient between two normal persons. The control subjects gave normal tracings in all leads, but the patient with the paralysis still presented the twitchings as before.

The following questions were propounded by me:

1. Is this a true auricular fibrillation?

2. Is this a vagotonia? Bramwell [17] reported an auricular fibrillation from injury to the vagus nerve.

3. Is this change from sinus arrhythmia in lead 1 to questionable auricular fibrillation in leads 2 and 3 neurogenic?

4. Is infantile paralysis formerly with resultant pathologic changes to the anterior horn cells and neuromusculature of the lower extremities accountable for this phenomenon in leads 2 and 3?

Dr. Horatio B. Williams of Columbia University offered me the following suggestions and proof:

1. The notchings are not auricular fibrillation or auricular flutter.

2. They are not artefacts in the electrocardiograph.

3. In his opinion they were muscle tremors from the left leg.

4. The application of one electrode on the left ankle and another electrode on the left thigh should show the same sort of notchings from the muscle tremor.

5. One electrode should be applied on the left ankle and another electrode on the right ankle.

6. These procedures then would give a record of the muscle twitchings independently of an electrocardiogram.

It is accepted by cardiologists in taking a standard three lead electrocardiogram patterned after the Einthoven method, if such a procedure is impossible because of the loss of an extremity (amputation), that the electrode for that extremity be placed above the stump terminus. With this thought in mind, although an amputation was not done here, I placed the left leg electrode on the lateral part of the left thigh. The three standard leads were then taken and were normal. The notchings were absent (fig. 2*B*). Therefore, the notchings are somatic in the left leg, as

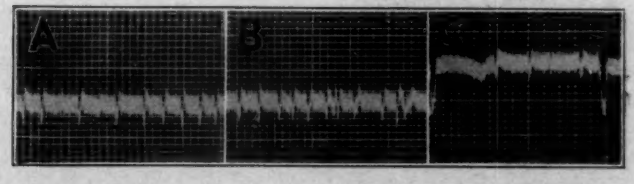


Fig. 3 (case 2).—*A*, electrodes placed on left thigh and left ankle; somatic muscle tremor isolated independent of an electrocardiogram. *B*, electrodes placed on right ankle and left ankle; somatic muscle tremor is isolated but was the complicating factor in figure 2*A*. *C*, electrode for right arm placed on left leg, and that for left leg placed on right arm; a reversed electrocardiogram with notchings due to left leg.

they are present only when the electrode on the left leg is placed in its normal position on the left leg and absent when placed on the thigh.

In following Williams' suggestion for proof 4, the right arm electrode was applied to the left ankle and the left leg electrode was applied to the left thigh with the selector switch turned to lead 2. This resulted and showed notchings of the left leg independent of an electrocardiogram (fig. 3*A*). In figure 2 these notchings were the simulating and complicating anomalies, as the left leg is used in standard leads 2, and 3.

16. Polevski, Jacob: The Heart Visible, Philadelphia, F. A. Davis Company, 1934, p. 60.

17. Bramwell, Crighton: Can a Head Injury Cause Auricular Fibrillation? Lancet **1**: 8-9 (Jan. 6) 1934.

Then the left arm electrode was applied to the right ankle, and the left leg electrode to the left ankle with the selector switch turned to lead 3 (suggestion 5). This tracing shows the same notchings independent of an electrocardiogram (fig. 3 *B*). In figures 3 *A* and *B*, 1 millivolt caused only 8 mm. of deflection.

Finally the electrode for the right arm was placed on the left leg and that for the left leg electrode was placed on the left arm with the selector switch turned to lead 2. This gave a negative QRS, also with notchings in the electrocardiogram. The process was reversed with the left leg in play (fig. 3 *C*).

CASE 2.—J. C., aged 74, has a typical rheumatic heart with mitral valvular involvement along with arteriosclerotic factors to show auricular fibrillation as compared with somatic intrinsic muscular notchings. The electrocardiogram (fig. 4 *A*) shows auricular fibrillation before digitalis therapy, a right

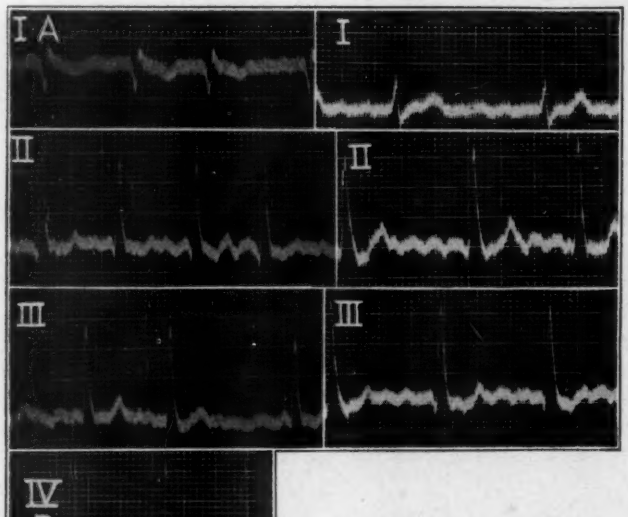


Fig. 4 (case 2).—*A*, auricular fibrillation recorded July 10, 1936, prior to digitalis; right axis deviation. *B*, recording on same patient, March 25, 1937, after administration of 1 cat unit of digitalis daily.

axis deviation, a fast, irregular ventricular rate, no PR interval, normal QRS, 0.08 second, and slurring and thickening of R in leads 2 and 3. There is a negative T in lead 1 and a diphasic T in lead 2. This tracing then shows an auricular fibrillation with evidence pointing to myocardial degeneration complicated by coronary changes. Eight months later (fig. 4 *B*) a tracing was taken from the same patient after receiving 1 cat unit of digitalis daily during that time. The wavelets are prominent and the ventricular rate, though irregular, is down to 82 beats a minute, compared to a previous variation of from 110 to 130 beats eight months before.

COMMENT

Katz and Korey[18] found it necessary to adopt unorthodox leads in attempting to evaluate electrical deflections because of the varying conductivity of structure. The somatic tremor in the patient who had had poliomyelitis was subjective and intrinsic. It was picked up and isolated by the electrocardiograph.

Obviously the somatic muscle tremor as seen in figure 2 *A* in leads 2 and 3 presents difficulties and doubt as to such oscillations being of somatic or cardiac origin. Clinically, however, that doubt is solved, and the methods as outlined by Williams will clear up the underlying disturbing factors electrocardiographically.

18. Katz, L. N., and Korey, H.: The Manner in Which the Electric Currents Generated by the Heart Are Conducted Away, Am. J. Physiol. **111**: 83-90 (Feb.) 1935.

SUMMARY

1. These two cases are compared to illustrate the similarity of somatic muscle tremor as obtained on a patient with the aftermath ravages of poliomyelitis and on one with a true rheumatic heart disease with arteriosclerotic involvement showing true auricular fibrillation.

2. The evidence present in the case of poliomyelitis tends to establish the fact that, apart from the fibrillation episode, the heart is normal.

3. The associated clinical pathologic conditions found in true auricular fibrillation are not found in this particular poliomyelitis patient.

4. In figure 2 *A*, leads 2 and 3, there is an absence of a P wave preceding each ventricular wave. These notchings complicate correct interpretation. They simulate auricular fibrillation.

5. Proof is established that the twitchings or notchings in figure 2 *A* are not true auricular fibrillation or auricular flutter.

6. Proof is established in figure 2 *B* and figure 3 that the notchings were of somatic origin and located in the left leg.

7. The electrocardiograph did not have anything to do with the production of these intrinsic artefacts (fig. 2 *A*).

8. The electrocardiograph by unorthodox placing of electrodes on the body offers a method of detecting subjective tremors aside from an electrocardiogram.

220 Farmington Avenue.

Clinical Notes, Suggestions and New Instruments

FEMORAL OVARIAN HERNIA

FRED H. BOWEN, M.D., BALTIMORE

In 1924 Watson[1] was able to collect the reports of only twenty-two instances of femoral hernia in which the ovary was the sole occupant of the sac. A careful survey of the literature reveals that only one case has been reported since that time. In view of the rarity of this condition the following history is recorded. (The case is from the practice of Dr. N. W. Bonelli.)

REPORT OF CASE

Mrs. E. W., a white woman aged 38, admitted to the West Baltimore General Hospital, Aug. 24, 1937, complained of severe pain in the right femoral region of eleven days' duration.

The family history revealed no familial disease or hernia. There was a questionable history of rheumatic fever at the age of 5 years. The patient has been married for nineteen years. She has two children, one 18 and the other 9 years of age.

There was a long history of constipation. There were no cardiorespiratory or genito-urinary symptoms. Menstruation began at the age of 13 years but soon stopped and began again at the age of 15. It occurs in cycles of twenty-eight days and lasts from three to four days. There has been pain in the lower middle part of the abdomen one day prior to the periods "for many years."

About twelve years before admission she experienced an occasional dull pain in the right femoral region. Ten years before admission, when five months pregnant with her second child, she moved the piano. While doing this a small painless lump appeared in the right femoral region. This soon disappeared. Seven years later it was noted that the lump had

1. Watson, L. F.: Hernia, St. Louis, C. V. Mosby Company, 1924.

reappeared. It was about the size of an almond at that time. Aug. 12, 1937, she jumped up to remove some clothes from the line and experienced severe pain in the right groin. At the same time a lump appeared in the right femoral region and this had been present ever since. There was no nausea, emesis or diarrhea. Pain was severe and had persisted. It did not radiate. Aug. 16 Dr. Bonelli was consulted and he placed the patient in bed with an ice cap to the femoral region. The pain abated somewhat but did not completely subside. No history was obtained of any endocrine disturbances.

Physical Examination.—The patient was somewhat apprehensive, well developed and nourished and looked her age. No abnormalities were found except a mass about the size of a small hen's egg just below the right inguinal ligament in the region of the femoral canal. This mass was firm and gave one the impression of being nodular. No impulse was elicited on coughing. Pelvic examination was negative.

The urine and blood studies were negative. The Wassermann reaction of the blood was negative.

Operation.—The preoperative diagnosis was femoral hernia. The possibility of inguinal lymphadenopathy was not overlooked. Operation was done August 25, under avertin-nitrous oxide anesthesia. After the usual surgical preparation of the skin an incision was made below and parallel to the inguinal ligament. The femoral canal was exposed and found to contain the ovary. There was no well developed sac found. The point of exit was between the femoral vein and Gimbernat's ligament. The ovarian pedicle was clamped and doubly ligated with No. 2 chromic gut. The edge of the inguinal ligament was sutured to the pectineal fascia with plain No. 2 catgut. The skin was closed with black silk. The patient's postoperative course was uneventful and she left the hospital September 6 in good condition. Since operation the patient has menstruated once with no pain.

Pathologic Report (by Dr. Ralph Mostwill).—The gross tissue measured 2 inches (5 cm.) in length by about 1¼ inches (3 cm.) in diameter. The surface was smooth and on cut section showed a small amount of solid tissue on one edge giving rise to a smooth cystic area.

The first section showed young fibroblastic tissue and inflammatory tissue, blood pigment and some groups of lymphoid cells. No ovarian tissue was seen in the first section. The second section was similar in every respect to the first. There was also some myxomatous tissue present. The third section showed ovarian tissue. There was a definite ovarian stroma present. An old corpus luteum was present which contained a blood clot. There was a definite band of granulosal cells. The stroma itself was rather sparse and not quite as heavy as that seen in the normal ovary. There were several large blood vessels, several lymph spaces and a second ruptured graafian follicle.

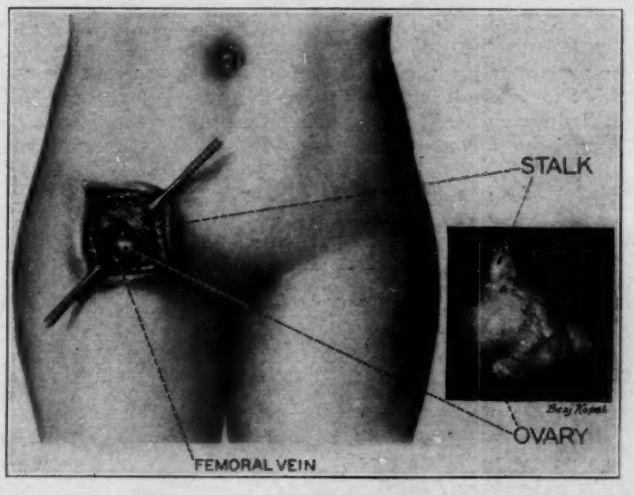
The diagnosis was ovary showing inflammatory changes.

COMMENT

The first case of herniation of the ovary was reported by Soranus of Ephesus in 97 A. D. He did not state whether this was a femoral or an inguinal hernia. A femoral hernia was believed to be a variety of inguinal hernia until 1572, when Guy de Chaliac pointed out the distinguishing features.

The descent of the ovaries is comparable to the descent of the testicles, but it is not so extensive. At first the müllerian and mesonephric ducts lie in a ridge on the surface of the mesonephros. The ovaries gradually move caudally from their original position. They reach the false pelvis about the third month of intra-uterine life and thence they migrate into the true pelvis at birth. Their descent into the pelvis is probably due to the surrounding parts growing proportionately more than the ovarian ligaments. Ectopic positions of the ovaries are not infrequent owing to complete or partial absence of the usual descent into the pelvis. On the other hand the ovaries may occasionally descend into the inguinal canal and may even be found in the labia majora. No mention of an ovary being congenitally present in the femoral canal was found in any of three standard textbooks examined. Congenital femoral hernia is a rare entity. In view of these and other facts it seems as if in the case reported here the hernia was acquired. The anatomy of femoral hernia may be found in any textbook.

The question of the etiology of hernia of the internal genital organs involves many factors. Heredity is frequently mentioned in the etiology of hernia. In support of this are cited many cases of three or four hernias occurring in the same family. Also to be considered are conditions associated with increased mobility of the uterine appendages, such as lengthening of the broad ligaments consecutive to repeated pregnancies. Because of the loose attachment of the ovaries to the broad ligaments, they are easily affected by the pathologic and physiologic displacements and movements that affect the pelvic organs. In this connection may also be mentioned pathologic relaxation of the uterine ligaments due to puerperal subinvolution. Abnormal length of the ovarian ligaments is also of importance. Lockwood and others [2] consider abnormal length of the mesovarium as the principal cause of ovarian hernia. In addition there are the conditions tending to increase of intra-abdominal pressure. A sudden increase in intra-abdominal pressure, a fall or coughing, may be the precipitating cause of the development of a hernia. Occupations necessitating repeated muscular effort such as lifting probably predispose to the formation of hernia. Physiologic or pathologic states that distend the abdominal cavity and enlarge the orifices usually present in the muscular and aponeurotic layers are important. Examples of these states are enteroptosis, obesity, abdominal tumors, ascites and pregnancy. All conditions that weaken the abdominal wall are of etiologic significance. Among these may be mentioned acute or chronic diseases debilitating the organism, especially such as cause great emaciation, obesity and traumatism.



Artist's conception of the reported case.

Femoral hernias most often contain omentum. If small intestine is present it is strangulated. Sometimes the sac contains the colon, cecum, appendix and bladder. Very rarely it contains the ovary, fallopian tube, uterus, testis, kidney, gallbladder and liver. Ahrens and Speigel [2] reported cases of incarceration of the stomach in the sac of a femoral hernia. The incidence of the internal genital organs in the order of frequency with which they are found in hernial sacs is ovary and tube, ovary, tube alone, nonpregnant uterus, pregnant uterus.

In hernias of short duration the herniated ovary is usually normal. Because of its position it is subject to trauma and circulatory disturbance. The position of the ovary in a hernial sac is unfavorable to its functional and anatomic integrity. Atrophy may occur, but it is usually not severe enough to check ovulation or menstruation. Cases of tuberculosis of the herniated ovary have been reported. In Mueller's [3] case of femoral ovarian hernia the ovary was cystic and two fibromyomas of the ovarian pedicle were present. The ovary may be enlarged, cystic, infiltrated with blood, the seat of a large hematoma or adherent to the sac, or it may present areas of suppuration or show gangrenous changes. One spindle cell sarcoma of the ovary has been found in a hernial sac. A

2. Cited by Heineck.[4]
3. Mueller, M. P.: Hernie crurale de l'ovaire par effort, Bull. et mém. Soc. d. chir. de Paris **24**: 162-166 (March 4) 1932.

cystic ovary "the size of a man's head" was reported. In short, the conditions which affect the ovary in its normal position may be found in the herniated ovary. In addition, other disorders due to torsion, strangulation and trauma to the exposed ovary are seen.

Symptoms of herniation of the ovary are rare in children. The special sensitiveness of the ovary is said not to appear before the age of puberty. Enlargement and increased tenderness of the hernial swelling during the menstrual period are occasionally noted. Pain in the herniated ovary is usually most pronounced with the menstrual periods. Dysmenorrhea has been reported in femoral and inguinal hernia of the normal tube and the normal ovary. The ectopic ovary is hypersensitive, probably because of constant irritation. Irritation of the herniated organ may give referred pain or sensation to other organs of the reproductive system. Occasionally very severe pain is present, as in the case here reported.

According to Heineck,[4] any irreducible mass in the femoral or inguinal region in a woman should lead one to suspect herniation of the internal genitalia. Diagnosis is difficult. On pelvic examination the fundus of the uterus is apt to be deviated to the side of the hernia,[4] and the cervix is deviated toward the opposite side.[3] If the uterus is manually moved toward the sound side it exerts traction on the herniated ovary.

Prompt surgical reduction and repair of the femoral hernia is the proper treatment. Too violent attempts at reduction of the herniated internal genitalia may result in harm to their anatomic and physiologic integrity. Trusses are notoriously inadequate in the treatment of crural herniation. In view of this and of the trauma caused by the truss it has small place in the treatment of this condition. Early correction in children is advisable in order to prevent developmental defects. Occasionally it is necessary to amputate the herniated ovary because it cannot be reduced, as in the present case.

Rayner and Dukeland avenues.

TICK PARALYSIS IN SOUTH CAROLINA

J. HEYWARD GIBBES, M.D., COLUMBIA, S. C.

Tick paralysis has been recognized in some of the Midwestern states for a number of years. It is an ascending type of paralysis, following the course of Landry's disease, at times resulting in death from bulbar involvement, associated with the bite of ticks and promptly disappearing when the feeding tick is found and removed.

Brief reference is made to the subject by Osler and McCrae[1] in which they state that the genus Ixodes and the genus Dermacentor are both capable of producing this type of paralysis. They refer to reports of cases from British Columbia, Wyoming, Montana and possibly Australia.

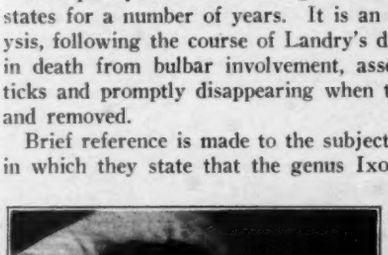


Fig. 1.—Wood tick attached to scalp in right occipital region.

Tyzzer[2] states that ticks of the genus Ixodidae are responsible for a paralysis occurring in sheep and in children, and that bites along the vertebral column and head are most prone to result in the paralysis. He speaks of the condition as having occurred in Oregon, British Columbia, Australia and South Africa.

Barnett,[3] in reporting a case of tick paralysis from the state of Washington, identifies the tick responsible for this condition as the Rocky Mountain wood tick, Dermacentor andersoni Stiles, and calls attention to the fact that this tick has been found in thirteen states roughly adjacent to the Rocky Mountains while tick paralysis in man has been reported only from the five states of Montana, Oregon, Wyoming, Idaho and Washington.

Tick-borne diseases are now recognized as occurring in the eastern part of the United States. Badger, Dyer and Rumreich[4] have reported on infections of the Rocky Mountain spotted fever type in general, and Montgomery[5] and Mayer[6] have reported cases of this type that have occurred in the state of South Carolina. Consequently the recognition of a case of tick paralysis in South Carolina becomes a matter of more than passing interest in that it is probably the precursor of other cases in which prompt recognition is the one effective means of handling.

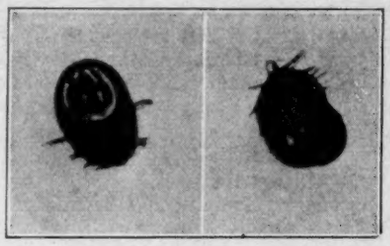


Fig. 2.—At left, dorsal view of tick; at right, ventral view of tick after removal from patient's scalp.

Paralysis resulting from the bite of a tick is presumably due to a noninfectious toxin which is liberated into the blood of the host while the tick is feeding. Experimental tick paralysis has been produced in animals by permitting female wood ticks to feed on them for a period of from one to two weeks, but it has not been found possible to transmit the disease by the blood of the affected animals or from the intestinal contents of the feeding ticks. The toxin responsible for the paralysis is supposed to come from the salivary glands of the ticks. Barnett refers to the work of Regendanz and Reichnow, who found that an extract of eggs from the common dog tick, injected into dogs, produced muscular weakness in the large animals and paralysis and death in the smaller ones.

Except for the fact that tick paralysis usually develops after a female tick has fully fed on the host, at which time, in nature, she is impregnated and ready for egg laying, there is nothing to suggest that the tick egg is related to tick paralysis in man. It is assumed that a feeding period of from five to six days is required for the tick to inject sufficient toxin to produce the changes in the central nervous system that lead to paralytic phenomena.

Fig. 3.—Tick removed from patient's scalp, uppermost in group, compared with wood tick before and after eating.

The symptoms usually begin in the lower extremities. Paresthesias, numbness and tingling frequently appear first but are quickly followed by muscular weaknesses and incoordination. The weakness may progress to complete flaccid paralysis. The upper extremities are then involved in similar fashion, and this is followed by indications of bulbar involvement, difficulties in speech, respiration and deglutition. If the tick is found and removed, there is a remarkably rapid reversal of the signs and symptoms, and a threatening condition in large part disappears within a period of from twenty-four to forty-eight hours. If the tick is not discovered, the bulbar paralysis may lead to death, especially in the case of children, while adults tend to have a slow, spontaneous recovery.

4. Heineck, A. P.: Hernias of the Ovary, of the Fallopian Tube and of the Ovary and Fallopian Tube, Surg., Gynec. & Obst. **15:** 63-109, 1912.

1. Osler, William, and McCrea, Thomas: The Principles and Practice of Medicine, ed. 9, New York, D. Appleton & Co., 1920.

2. Tyzzer, E. E.: The Relation of Insects and Other Arthropods to Disease, Oxford Medicine **5:** 966 (22), 1927.

3. Barnett, E. J.: Wood Tick Paralysis in Children, J. A. M. A. **109:** 846 (Sept. 11) 1937.

4. Badger, L. R.; Dyer, R. E., Rumreich, A. S.: Infection of Rocky Mountain Spotted Fever Type: Identification in Eastern Part of United States, Pub. Health Rep. **46:** 463 (Feb. 27) 1931.

5. Montgomery, B. M.: A Disease of the Rocky Mountain Spotted Fever Type, J. South Carolina M. A. **29:** 40 (Feb.) 1933.

6. Mayer, O. B.: Rocky Mountain Spotted Fever in South Carolina, J. South Carolina M. A. **29:** 209 (Sept.) 1933.

REPORT OF CASE

The following case presents a classic example of tick paralysis:

History.—Mrs. H. E. T., a resident of Columbia, S. C., while on a visit to Greenville, went on June 19 to inspect some prize pigs. Four days later she experienced the sensation of tingling and numbness in the lower extremities. In the latter part of the same day the legs felt weak and she "did not know just where they were going." The next morning her legs would not support her body and she noticed numbness and tingling in the upper extremities. She was brought to Columbia in an ambulance, and, on arrival, stated that she was aware of a weakness in the arms and hands. She had had no difficulty in talking or swallowing. She was greatly alarmed about herself.

Physical Examination.—The patient was of fair nutrition and good color. She was in a semihysterical condition. The skin showed no abnormal eruptions or pigments. The eyes were not prominent, the pupils were equal and reacted normally, the extrinsic eye muscles functioned normally, and there was no nystagmus and no icterus. The nose, ears and throat were negative. The teeth were false. The thyroid was not enlarged. There were no enlarged lymph glands. The heart was not enlarged, the sounds were clear at the apex and base and the heart action was slow and regular. The lungs were clear. The abdomen was of normal appearance. There was no tenderness. There were no masses and no palpable organs. The extremities showed no edema and there was no fine tremor of the fingers. The joints were negative. The pulse was 92 and regular. The temperature was 100 F. (5 p. m.). The blood pressure was 140 systolic, 80 diastolic. The eyegrounds showed no abnormalities.

Neurologic Examination.—The muscles showed some loss of strength in the legs with definite incoordination in the movements. The knee to heel test showed pronounced ataxia, and the movement was carried out with extreme difficulty. There was no demonstrable weakness in the upper extremities. Sensation gave normal response to all modalities throughout. The Babinski responses were normal. The ankle jerks and knee kicks were absent. The abdominal skin reflexes were not present. The deep tendon reflexes at the wrists and elbows were present. The jaw jerk was normal.

Course.—June 25 the weakness in the lower extremities was more pronounced. There was demonstrable weakness in the muscles of the arms and hands and there was definite ataxia in the movements of the upper extremities.

June 26 the weakness and ataxia in the upper extremities was so pronounced that the patient could not feed herself.

June 27 the patient stated that she thought her legs felt somewhat better. But her upper extremities had shown no improvement and her speech had become thick. She had had no difficulty in swallowing. She called attention to a "tumor on the scalp" which had been found by a nurse in combing her hair. Inspection showed a fully distended wood tick, measuring 1.5 by 1 cm., attached to the right occiput. The tick was removed.

June 28 the patient stated that she "felt better all over."

June 29 the patient seemed entirely well. The knee kicks had returned and the abdominal skin reflexes were present. The impediment in speech had disappeared.

July 1 the patient was dismissed from the hospital.

On admission to the hospital the patient's temperature was 100 F. This was the only rise above normal throughout the course of illness. The laboratory studies on the blood, urine and stool were unimportant.

July 15 the patient was at my office and seemed none the worse for her experience.

CONCLUSIONS

A case of tick paralysis occurred in South Carolina. Attention is called to it because of the importance of recognizing this condition as a possibility in the eastern part of the United States and of the necessity for finding the tick and removing it as a means of curing the patient.

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Special Article

HUMAN REQUIREMENTS FOR VITAMIN B_1

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This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—ED.

Other papers in this series discuss the chemistry of vitamin B_1, the pathology of vitamin B_1 deficiency and the physiologic function of this dietary essential. What can be said concerning the amount of this vitamin needed by man?

As beriberi is due to lack of vitamin B_1, it is natural that the earliest estimates of the human requirement of this factor should have been in terms of the therapeutic value of certain foods. For example, Hulshoff-Pol [1] studied the efficacy of katjang idjo, a native bean (Phaseolus radiatus), in the cure of beriberi. The practical result of this type of investigation was to focus attention on the importance of foods containing vitamin B_1 and therefore their inclusion in the dietary. All work along this line prior to about 1911, when Funk [2] introduced the word "vitamine," necessarily suffered the disadvantage that controversy still prevailed respecting the exact cause of beriberi and therefore the validity of any dietary measures in its treatment. In 1907 Braddon [3] published his impressive monograph "The Cause and Prevention of Beriberi," in which he championed the idea that subsistence on a white rice diet is responsible for beriberi, but explained the disease as due to a toxin present in the rice. Although this explanation was later shown to be erroneous, Braddon's book has rendered a great service to students of beriberi because it contains a vast amount of information relating to beriberi epidemics. This material was reexamined in the light of the deficiency disease hypothesis by Vedder,[4] whose book appeared almost immediately after the word "vitamine" had been suggested by Funk. When it had become clear that beriberi is fundamentally a vitamin deficiency and that it is possible to study the protective factor in experimental animals, a new kind of evidence [5] bearing on the question of the human need for this vitamin appeared in the scientific literature, evidence based on comparisons of the requirements of different species of animals and their suggestions for the human species. For the ideal type of information needed to answer the question of the human requirement for this vitamin it was of course necessary to await isolation of the factor in pure form and tests of it on the human species, something accomplished only

1. Hulshoff-Pol, D. J.: Katjang Idjo, un nouveau médicament contre le beri-beri, Janus **7**: 524-534, 1902.
2. Funk, Casimir: The Chemical Nature of the Substance Which Cures Polyneuritis in Birds Induced by a Diet of Polished Rice, J. Physiol. **43**: 395-400, 1911.
3. Braddon, W. L.: The Cause and Prevention of Beriberi, New York, Rebman Limited, 1907.
4. Vedder, E. B.: Beriberi, New York, William Wood & Company, 1913.
5. Cowgill, G. R.: The Vitamin B Requirement of Man, New Haven, Yale University Press, 1934.

recently.[6] In the light of this development of the subject it must be obvious that it has not as yet been possible to make as many tests with the pure vitamin as might be desired, but that these may reasonably be expected in the near future.

From Osborne and Mendel's[7] quantitative experiments in 1922, designed to determine the rat's need for vitamin B, it became clear that the requirement for this factor increases with increase in body weight. In 1923 I was much impressed with the fact that, per unit of body weight, the rat was found to require roughly five times more vitamin B (or vitamin B_1, according to the newer terminology) than the dog. This suggested that man, a still larger species, might be found to require relatively even less than the dog. From what was known at the time regarding the adequacy of human diets and the rat's need for vitamin B_1 it was evident that man could not possibly require relatively as much as the rat. It occurred to me that quantitative experiments on as many species as possible might lead eventually to knowledge applicable to man. Such experiments were therefore made on four species, the mouse, rat, pigeon and dog. All of these tests were made with the same vitamin B_1 concentrate in order to avoid error due to the presence of unknown dietary essentials, the amounts of which might vary in different materials. Preliminary observations of cures of animals suffering from advanced B_1 deficiency gave such variable results that it was decided to make the desired quantitative tests on animals as nearly normal as possible. Therefore the prevention of the characteristic anorexia which appears in response to lack of vitamin B_1 was made the physiologic sign of interest.

When the minimum dosages of vitamin for a given species were plotted on coordinate paper against body weight, a curve resulted. Attempts to secure a straight line finally resulted in the discovery that the dosage of vitamin was in an approximately linear relationship to the body weight raised to the five-thirds power. This first approximation type of relationship was found to hold quite well within the ranges of body weight studied in the four species, a fact which naturally suggested that it would also hold for the human species. It was further observed that the values of the equating constant (K_{vit}), derived from the plots of data for the various species, were in some way related inversely to the "average maximum size" of the species, the mouse requiring the most and the dog the least per unit of body weight, with the rat and the pigeon in appropriate intermediate positions.

Obviously it was necessary to determine in more detail the nature of this inverse relation to body size if the human requirement was to be found. This was finally achieved with accuracy sufficient for the purpose by comparing the various species on the basis of a new variable called the maximum normal size of the species. When this was done it was possible to place all the species on the same straight line with respect to the vitamin B_1 requirement. It was then evident that a value for the human requirement would be suggested by the "maximum normal weight" for man. Data on weight were secured from actuarial tables and a formula then constructed by which to express man's need for vitamin B_1.

The next step in the investigation consisted of actual tests of this expression to determine its validity and limitations, if any. In order to do this it was necessary (1) to estimate as accurately as possible the vitamin B_1 content of various diets known to have been associated with the presence or absence of beriberi and (2) to apply the new formula to the persons who ate those diets. This is hardly the place to review the results of the study in any detail; the interested reader is referred to the monographic report.[5]

Let it suffice to point out that examination of numerous diets known to have been associated with epidemics of beriberi revealed that their contents of vitamin B_1 were indeed too small to have met the estimated needs of the persons subsisting on them; therefore beriberi should have appeared, as it did. Likewise, numerous diets known to have been associated with absence of beriberi were found to contain amounts of the vitamin above those estimated to have been required by the persons eating them. These calculations naturally required some knowledge of the vitamin B_1 content of numerous foods, and a large body of information was obtained indirectly from consideration of assay data in the literature. It is worthy of note that a similar study of beriberi diets made by Baker and Wright,[8] using for the calculations the results of food assays made by the same method in the same laboratory, has yielded essentially the same results. Another confirmation has come out of the work of Van Veen[9] carried out in Java.

In this connection it is pertinent to point out that I have always considered the formula derived from this research as constituting merely a first approximation. In the final chapter of my monograph I particularly invited the cooperation of workers everywhere in the confirmation or determination of limitations of these results and the deductions drawn from them. Considering the indirect nature of the approach to the problem, the necessity for making numerous assumptions, and the possibilities resident in further researches in this field, it would be most surprising indeed if the results of this first approximation study should not require modification as a result of later discoveries, particularly those made possible by the isolation and ready availability of the pure vitamin.

Certain difficulties in my work, to which a critic might call attention, have always been appreciated. For example, in the rat the five-thirds power relationship, strictly speaking, applies only to animals ranging from about 70 to 150 Gm. in body weight, for the data obtained and discussed were yielded by animals of this size. It may be a quite unjustified extrapolation to apply the formula to larger animals. However, it is certainly significant that when Drs. W. H. Eddy and M. Kellogg repeated the study on rats they found precisely the same relationship to hold with animals up to about 150 Gm. weight; with larger animals, however, the formula did not hold. It may be that the formula stands in some relation to growth, or more particularly the changing caloric exchange characteristic of growth, and this idea receives support from the work of Hendricks.[9a] On examination of the caloric intakes of rats of different weights, taking for example the food intake

6. Williams, R. R.: The Chemistry of Thiamin (Vitamin B_1), J. A. M. A. **110**: 727 (March 5) 1938.

7. Osborne, T. B.; Mendel, L. B., and Cannon, H. C.: Quantitative Aspects of the Role of Vitamin B in Nutrition, J. Biol. Chem. **54**: 739-752 (Dec.) 1922.

8. Baker, Audrey Z., and Wright, Margaret D.: Vitamin B_1 in Human Diets, Proc. Roy. Soc. Med. **29**: 1145-1154 (July) 1936.

9. Van Veen, A. G.: Het B_1-type gehalte van veodingsmiddelen (summary and discussion given in English on last two pages), Geneesk. tijdschr. v. Nederl.-Indië **75**: 2050-2064 (Nov. 26) 1935.

9a. Hendricks, W. A.: The Relation of Vitamin B Requirement to Metabolism, Am. J. Physiol. **105**: 678-683 (Sept.) 1933.

data of Osborne and Mendel cited in my monograph (on page 82), one obtains over the range of weights covered by these vitamin B experiments a curve similar to the ordinary growth curve, but after about 150 Gm. of body weight the plot of caloric intake against weight proves to be practically a straight line with caloric intake increasing slowly with increasing body weight. In view of these considerations it is quite possible that the five-thirds power relationship set forth in the vitamin formula does not apply to these large rats but that some other relationship holds. The same point of view applied to the dog may help to explain why the five-thirds power formula gives as the quantity of vitamin B required by a large Newfoundland dog, for example, an apparently altogether too large amount.

I am also aware that my plot of species vitamin constant against maximum normal weight of the species involves a plot of logarithms against logarithms, and therefore the points actually plotted may represent appreciably variable instead of quite fixed values. Even in the face of this fact it appears obvious to me that one still obtains as the outstanding feature of the resulting plot a definitely inverse relationship of species vitamin B_1 requirement to maximum normal size of the species. Furthermore it seems especially significant that it was from this particular plot that a suggestion was obtained of the appropriate constant to use in the formula applicable to man; and tests of the formula thus derived on various human diets have given essentially the same results as those yielded by other workers who have used more recent and exact data on vitamin contents of foods, as well as experimented with the pure vitamin. It is difficult to believe that such an outcome and confirmation of the formula can be merely fortuitous.

The formula (see table) indicates that the value of the vitamin B_1 : calory ratio increases with increase in body weight. In a personal communication Dr. R. R. Williams has expressed his disagreement with this point. He feels that the fundamental relationship is merely between vitamin B and carbohydrate or non-fat calories. In the light of the newer researches indicating a probable role of this vitamin in the metabolism of carbohydrate,[10] such a view is well supported. However, the question as to whether the critical value of the vitamin : calory ratio increases with increase in body size can hardly be disposed of in such simple fashion in my opinion. With the perfection of chemical methods for analysis of blood and urine for vitamin B_1 and their application in studies of vitamin B_1 physiology, it should be quite possible sooner or later to obtain data bearing definitely on this question. From certain preliminary observations which Jolliffe and collaborators have shown me it is reasonable to believe that the value of this ratio may indeed prove to vary with body weight as I have already suggested. For all practical purposes and the evaluation of human dietaries the settlement of this question may be quite academic. The final answer will probably be obtained only when experiments specially designed for the purpose have been performed.

The formula by which to estimate a given person's requirement for vitamin, as stated originally, expressed the vitamin variable in terms of the milligram-equivalent, a unit based on the particular yeast concentrate used in the studies from which the formula was derived. It is of course more desirable that the international unit be used, and a table giving factors for converting the milligram-equivalent to the international, Sherman and other units was included in the monograph describing the formula. From a theoretical point of view the ideal unit is a given amount of the pure crystalline vitamin, i. e., thiamin chloride, and it seems likely that sooner or later the international committee will adopt such a standard. In view of these considerations, therefore, I have prepared the accompanying table, by means of which any investigator may use my formula to obtain the vitamin values in terms of the present international unit and various representative quantities of thiamin chloride. It is obvious that the value of only the equating constant is affected when different units are used for expressing the vitamin variable, and therefore only the appropriate values of K_{vit} need be given in the table.

It will be noticed that the table gives values of the equating constant for different quantities of thiamin chloride. Several investigators have reported different amounts of the pure vitamin as equal to the present international unit. The smallest and the largest quantity suggested have been 2 and 5 micrograms, respectively, which would mean that from 500 to 200 international units is contained in 1 mg. of thiamin chloride. These variations are doubtless to be attributed to the fact that the different investigators have not used the same biologic test. It seems reasonable to believe that, if the international committee decides to establish a new unit based on the pure vitamin chloride, the selected quantity will be between 2 and 5 micrograms. From the data given in the table it will be a simple matter to determine what value of the equating constant to use in the formula to give the vitamin values in terms of the new international unit.

Table for Obtaining Vitamin Values

When vitamin is expressed in terms of the units indicated below, the value of K_{vit} to use in the formula $\frac{\text{vitamin}}{\text{calories}} = K_{vit} \cdot \text{weight}^{\frac{1}{3}}_{\text{kilogram}}$ is that shown in the table.

Unit of Vitamin B	K_{vit}
Milligram-equivalent (Cowgill[8])	0.0284
International unit (1934)	0.00142
Micrograms of thiamin chloride when 1 international unit is taken as equal to	
2 micrograms	0.00284
3 micrograms	0.00426
4 micrograms	0.00568
5 micrograms	0.0071

It should be emphasized that estimates of the human requirement for vitamin B derived from my formula pertain to the minimum or beriberi-preventing level; the optimal intake is undoubtedly much greater. What should be taken as the optimal requirement will be discussed later.

THE NORMAL ADULT

What does the formula suggest as the minimum vitamin B_1 intake necessary for the adult human being? Obviously the weight is significant. Also, as the formula indicates, the vitamin requirement is related to the caloric intake, and, in view of what is known about the probable function of the vitamin in the body,[10] a still closer approximation would be with respect to the calories from carbohydrate metabolism. Assuming an average degree of activity and therefore level of daily energy intake, it appears that a man weighing 45 Kg. (99 pounds) requires as a minimum about 135 international units of the vitamin; a person weighing 70 Kg. (154 pounds) needs approximately 280 international

10. Cowgill, George R.: The Physiology of Vitamin B_1, J. A. M. A. 110: 805 (March 12) 1938.

units, and a still heavier person weighing 90 Kg. (198 pounds) requires about 550 international units. Obviously the exact figure depends very much on the number of calories involved or taken in the calculation.

These values agree quite well with those suggested by other students of the problem. Thus Jansen, working with the small stature races of the Far East, estimated that from 1 to 2 Gm. of the international standard adsorbate was required daily as a minimum, with about 4 Gm. constituting a curative dose for patients with beriberi. Since 1 international unit is defined as the activity of 10 mg. of the standard adsorbate, his dosages can be translated to from 100 to 200 international units as the daily minimum and 400 international units for the cure of beriberi. These minimums, pertaining to people with body weights ranging from about 45 to 60 Kg., obviously agree very well with those suggested by the formula.

Reference has already been made to the relationship of the vitamin requirement to the caloric intake. As it is easy to estimate the number of calories yielded by a given diet, a simple form of standard to use in expressing the vitamin need is the number of units of vitamin per hundred calories. Stated in this way the minimums cited mean approximately 10 international units per hundred calories. Rose [11] has examined the reports of numerous investigators and recommended a daily intake of 30 Sherman-Chase units per hundred calories as a liberal allowance, an intake which would be equal to 15 international units per hundred calories. As pointed out by Daniel and Munsell,[12] "for the average adult this would mean between 750 and 900 Sherman-Chase units, or roughly 250 to 400 international units per day, quantities admittedly well above the minimum requirement."

Vorhaus, Williams and Waterman [13] estimated that the normal adult takes in daily about 1 mg. of pure vitamin B_1; they did not mean that this necessarily represents a definite requirement, however. If one assumes that from 3 to 5 micrograms of the pure substance equals 1 international unit, this estimate means a daily intake of from 333 to 200 international units, which is in the range of minimums previously suggested.

Evidence of another type bearing on this question may be cited in the work of Harris and Leong.[14] These investigators studied the excretion of vitamin B_1 through the kidney. The healthy adults studied by them, from 13 to 37 years of age and subsisting on normal diets, were found to excrete daily from 12 to 35 international units, or from 30 to 90 micrograms of the pure vitamin hydrochloride; this excretion was estimated to be approximately from 5 to 8 per cent of the total daily intake of the vitamin. These authors concluded that a urinary output of vitamin B_1 below 12 international units daily, or approximately 1 unit per hundred cubic centimeters, should be regarded as evidence for strongly questioning the adequacy of vitamin B_1 in the diet. On the basis of these observations the minimum daily standard for a man weighing 140 pounds (63.5 Kg.) was set at 200 international units. It is evident that this estimate of the minimum agrees well with the others which have been cited.

Further data bearing on this question may be cited. Van Veen [9] has suggested 150 international units per day as the beriberi-preventing minimum suited for the inhabitants of the Dutch East Indies. From their studies of numerous dietaries throughout the world Baker and Wright [8] of London arrived at from 200 to 500 international units per day as the minimum for man. It seems pertinent to point out that the oriental races represented by the Van Veen report are normally of smaller stature than Europeans and Americans. The lower suggested minimum of Van Veen might be interpreted in the light of my formula as due to the vitamin: calory ratio having a lower value for these people of smaller body weight. Against this view, of course, it can be argued that these people eat less food and the fundamental relationship is really between the vitamin and the amount of food or number of calories ingested.

A still more recent contribution is seen in the work of a German group [14a] of investigators, who have suggested that the minimum for man is from 250 to 750 micrograms of thiamin per day. Since there is no unanimity of opinion regarding the number of micrograms of thiamin to be taken as equivalent to 1 international unit, it is difficult to say exactly how many international units these suggestions represent. Taking 1 international unit as equivalent to from 2 to 5 micrograms of thiamin, the range covered in the table, the lower figure (250 micrograms) might be from 50 to 125 international units; similarly the larger figure (750 micrograms) could be anywhere from 150 to 375 international units. What is probably more significant is the suggestion of these German authorities that from 1 to 2 milligrams of pure thiamin daily is needed for health, which agrees with the opinion of Williams and associates.

The perfection of chemical methods for analyzing the urine and other biologic fluids for vitamin B_1 should lead to further extensive studies to determine the extent to which an injected standard dose of the pure vitamin is excreted through the kidney and the relation of the amount excreted to the store in the tissues. If the tissue reservoir is not saturated, it is reasonable to suppose that a smaller fraction of the injected vitamin will be eliminated in a standard interval of time; with the tissues already storing the maximum amounts, greater portions of the injected test dose should be eliminated. Perfection of the technic for such a test would mean that a valuable clinical function test for vitamin B_1 deficiency had been obtained.

Such an "injection-saturation-excretion technic" has already yielded valuable results in studies of the body's requirement for vitamin C. It is of course possible that the same results would not be obtained with thiamin because of differences in function in the body, etc. Some preliminary observations, which Dr. N. Jolliffe and associates have shown me, suggest that this may after all prove to be the case, that vitamin B_1 differs from vitamin C in respect to tissue saturation and elimination. The entire subject merits extended study which should lead to results useful both to public health and hygiene and to clinical medicine.

MOTHER AND INFANT

What is known about the vitamin B_1 requirement of the human mother and her infant? The high inci-

11. Rose, Mary S.: The Foundations of Nutrition, New York, Macmillan Company, 1933.

12. Daniel, Esther, and Munsell, Hazel E.: Vitamin Content of Foods: A Summary of the Chemistry of Vitamins, Units of Measurement, Quantitative Aspects in Human Nutrition and Occurrence in Foods, Miscellaneous Publication 275, U. S. Department of Agriculture, June, 1937.

13. Vorhaus, M. G.; Williams, R. R., and Waterman, R. E.: Studies of Crystalline Vitamin B: Experimental and Clinical Observations, J. A. M. A. **105**: 1580-1584 (Nov. 16) 1935.

14. Harris, L. J., and Leong, P. C.: Vitamins in Human Nutrition: The Excretion of Vitamin B_1 in Human Urine and Its Dependence on the Dietary Intake, Lancet **1**: 886-894 (April 18) 1936.

14a. Stepp, W.; Kuhnau, J., and Schroeder, H.: Die Vitamine, Stuttgart, F. Enke, 1937, p. 42.

dence of infantile berberi in certain regions is evidence of the importance of this question. In this connection it is important to bear in mind two facts: 1. During the first six months of its life the human infant subsists almost entirely on milk and is therefore in the category of persons who live on a restricted dietary. 2. The amount of vitamin B_1 present in the milk has been shown to be dependent primarily on the quantity ingested by the mother. Studies on rats [15] have shown that for a lactating rat to nurse her litter successfully the vitamin B_1 intake must be about five times the amount needed for mere maintenance of the maternal organism. Studies of numerous dietaries [16] used in regions where beriberi is endemic have shown that they are low in vitamin B_1 content. For example, Baker and Wright [16] found the B_1 content of a group of such dietaries to range from 71 to 180 international units daily. It is not surprising, therefore, that the lactating women of many sections of the Far East who subsist on these faulty diets should secrete milk containing too small an amount of the vitamin for the infant and that infantile beriberi should be of common occurrence in these regions.

In 1935 the Technical Commission of the League of Nations Health Committee published a report entitled the "Physiological Bases of Nutrition," [17] dealing particularly with the vitamin requirements of pregnancy and lactation and recommending during these two physiologic states a daily vitamin B_1 intake of from 150 to 250 international units. This suggestion is based on daily intakes of from 3,000 to 3,500 calories during lactation. In the light of the preceding discussion such a recommendation seems altogether too low. It is of course difficult to make any all-inclusive single statement as to what the human mother should consume daily (this is what the commission was attempting to do) because the factors which must be considered do not always operate to the same degree in every person. In lactation the body weight, the total caloric exchange and the volume of milk secreted all have a part as well as the intake of vitamin. It is possible that the recommendation of the commission may be regarded as reasonably satisfactory for the average woman of certain races normally smaller in stature than our own. For the American mother, however, I believe the daily vitamin B_1 intake might well be not less than 15 and preferably as high as 20 international units per hundred calories. If for any reason it is difficult to secure these higher levels of intake, obviously the vitamin may be given directly to the infant.

More exact data bearing on this question might be secured from a study of the effects in lactating women of various levels of vitamin B_1 intake on the concentration of the vitamin in the milk secreted; the intake giving the highest concentration of vitamin in the milk and above which no further increase is produced might be taken as the standard of vitamin B_1 intake during lactation in the human species. Now that the pure vitamin is available, it should be possible to perform experiments with the desired limitation of variables not possible hitherto. Studies of the maximum retention of doses of pure vitamin administered to lactating women differing markedly in size and caloric intake should yield data useful in relation to this question.

This problem may also be considered from the standpoint of the vitamin intake of the nursing infant. The "American Public Health Year Book" for 1934-1935 [18] states that the daily requirement for vitamin B_1 increases from 50 to 200 international units between infancy and adolescence. Should this lower figure, 50 international units, be regarded as a suitable optimum for the month old infant? If one considers the baby's daily caloric intake of human milk having the maximum amount of vitamin B_1 ever found, how much vitamin B_1 would the infant receive from such milk? My calculations give a figure approximately 80 international units instead of the 50 stated in the Year Book's recommendation. Until extensive quantitative studies have been made and this result shown to be erroneous, I suggest that 80 international units daily be taken as the optimum for the very young baby. One might perhaps call this a minimum, by which one would mean that no baby should receive less than this amount daily.

From theoretical considerations one should expect the vitamin B_1 requirement to be greater for growth than for maintenance. In addition to the vitamin consumed during the metabolism associated with mere maintenance of the organism, the growing person needs the vitamin which is to become a normal part of the new cells produced by growth. Furthermore, since the caloric exchange and the general level of energy metabolism are relatively higher during growth, one may also expect to find a higher vitamin B requirement for growth because of this increase in the variable in the formula representing metabolism. Dann and I [19] studied this question in the rat by comparing the amount of vitamin B_1 needed to secure the good growth characteristic of our colony with the amount required for maintenance at a given body weight after the rats had made good growth to that weight. The data indicated that the B_1 requirement for good growth in the female rat is from three to five times the need for mere maintenance.

THE CHILD

What is known about the child's need for vitamin B_1? The formula discussed in the first part of this paper applies more strictly to the adult organism and gives only the beriberi-preventing minimum. Theoretically, children subsisting on a diet just sufficient for their parents should not acquire beriberi until by growth they have reached the approximate size of the parents. The primary effect of such a diet on the children would probably be some limitation of growth. This would explain why beriberi, although common among breast-fed infants of the Far East, is comparatively rare in children between the weaning age and early adult life. It becomes appropriate, therefore, to examine the growth of children in relation to the supply of vitamin B_1.

It appears evident from the reports of several investigators that shortage of this vitamin has operated in part to limit the growth of children in North America. For example, Morgan and Barry,[20] in their study of

15. Evans, H. M., and Burr, G. R.: On the Amount of Vitamin B Required During Lactation, J. Biol. Chem. **76**: 263-272 (Jan.) 1928. Sure, Barnett: Dietary Requirements for Fertility and Lactation: XV. The Inefficiency of the Lactating Mother (Mus Norvegicus Albinus) in Secreting Vitamin B in the Milk, and the Relation of This Phenomenon to Infant Mortality (detailed report), ibid. **76**: 685-700 (March) 1928.

16. Baker, Audrey Z., and Wright, Margaret D.: Vitamin B_1 Content of Human Diets, Brit. M. J. **1**: 599-600 (March 21) 1936. Cowgill.[5]

17. League of Nations Health Committee, Technical Commission: Report on Physiological Bases of Nutrition, London, 1935.

18. American Public Health Year Book 1934-1935: Human Requirements for Vitamins, pp. 69-72.

19. Dann, Margaret, and Cowgill, G. R.: The Vitamin B Requirement of Female Albino Rats for Maintenance and Growth, Am. J. Physiol. **109**: 27-28 (July) 1934.

20. Morgan, Agnes F., and Barry, Margaret M.: Underweight Children: Increased Growth Secured Through the Use of Wheat Germ, Am. J. Dis. Child. **39**: 935-947 (May) 1930.

underweight children, obtained weight gains from 150 to 170 per cent above the expected gain when they fed two wheat germ rolls at the noon meal; these gains may be contrasted with the gains of the control group, which received white flour rolls and made only from 50 to 71 per cent of the expected gain during the same period. Summerfeldt [21] observed gains of 4.54 and 5.27 pounds (2 and 2.4 Kg.) in ten weeks associated with the administration each week of 4.2 ounces (113 Gm.) of wheat germ and 0.28 ounce (8 Gm.) of yeast, these supplements being incorporated in a special breakfast cereal; the control groups, receiving ordinary cereals, gained only 1.25 and 1.27 pounds (567 and 576 Gm.), respectively. An extension of this study was made by Ross and Summerfeldt,[22] who also used a vitamin B_1 concentrate in addition to the ordinary cereal; their results indicated that the gain with the special cereal was in large measure due to its vitamin B_1 content. The observations of Bartlett [23] and Schlutz [24] of anorexia in children brought to an outpatient clinic suggest that lack of vitamin B_1 is more common than is generally appreciated.

Knott [25] made vitamin B_1 balance studies with eight children from 4 to 7 years of age. "In the . . . study, the intakes which resulted in the highest retentions (regardless of whether retentions were calculated on the basis of food minus urine or food minus total excretion) were found to be six to seven times greater than the minimum requirement for preventing beriberi as determined by means of the formula suggested by Cowgill." Knott also pertinently remarked: "If the intakes resulting in highest retentions may be considered optimum, this wide range between minimum and optimum requirement would seem to explain both the existence of vitamin B deficiency among children and the beneficial results obtained by additions of vitamin B to the diet." This suggested optimum for young children was expressed by Knott as "about 40 Chase-Sherman units per kilogram per day." This would be equal to about 20 international units per kilogram daily. On the basis of the data on body weight and caloric intake recorded by Knott, this figure may be translated to mean from about 20 to 25 international units per hundred calories.

CLINICAL FACTORS INFLUENCING THE VITAMIN B_1 REQUIREMENT

Heightened Metabolism.—Examination of the formula given previously reveals that the vitamin B_1 requirement is related to the caloric exchange. If the caloric factor is increased, the body weight remaining unchanged, obviously the vitamin intake must be increased. This rule has been tested experimentally both in dogs [26] and in pigeons [27] and found to be correct. The metabolism factor was increased by administration of thyroid tissue, with consequent production of experimental hyperthyroidism, and in every instance, after the appearance of anorexia, with consequent loss in body weight, the administration of sufficient vitamin B_1 restored the urge to eat and the animals voluntarily ate enough additional food to permit return to the original weight and to secure maintenance at that weight. It may clarify the significance of these results if I point out that the voluntary intake of calories during the experimental hyperthyroidism following administration of vitamin B_1 was practically twice that characteristic of the animals before thyroid was given. In other words, the level of energy exchange induced by the administration of thyroid was approximately double the normal level. In man such a difference would correspond to that seen in a case of extremely overactive thyroid.[28] Although it must be recognized that exophthalmic goiter may not be due simply to an overactive thyroid,[29] it does seem clear that patients suffering from this disease should receive considerably more vitamin B_1 than normal persons. A good practical rule to follow in such cases would seem to be to administer not less than 20 international units of vitamin B_1 per hundred calories of the estimated total daily metabolism. Even this intake would mean using a factor of safety of only 2. If one were to take the measurements of the requirements of pigeons in experimental hyperthyroidism as a guide,[27] a much greater factor of safety would be justified in certain cases. Some of the birds required from two to five times the normal amount of vitamin when given the thyroid. The differences may be related to variation in absorption of material from the alimentary tract and other functions. With the pure vitamin now available, extensive tests of its efficacy in the treatment of exophthalmic goiter should be made; the results of such clinical trials would provide the best basis for the formulation of rules regarding the appropriate dosage of the vitamin.

The effect of an increase in the caloric factor on the vitamin B_1 requirement has also been tested in dogs given forced exercise.[30] In every case, increase in the number of calories representing total metabolism was associated with an increase in the vitamin need.

These confirmations of the relationship between calories and the vitamin B_1 requirement suggest to the clinician the wisdom of increasing sufficiently the vitamin B_1 supply in all cases in which there is a significant increase in the energy metabolism. For example, in the treatment of prolonged fevers by the feeding of so-called high calory diets, ample supplies of vitamin B_1 should be given along with the "extra" calories. How much vitamin should be given? It is difficult to make any dogmatic general statements in answer to this question. It can be suggested, however, that some estimate be made of the total daily caloric exchange and not less than from 15 to 20 international units of the vitamin per hundred calories be provided. If there is a reason to believe that the patient has been for some time on a low vitamin B_1 regimen, the daily administration of from 5 to 10 mg.[31] of the pure vitamin for about a

21. Summerfeldt, Pearl: The Value of an Increased Supply of Vitamin B_1 and Iron in the Diet of Children, Am. J. Dis. Child. **43**: 284-290 (Feb.) 1932.

22. Ross, J. R., and Summerfeldt, Pearl: Value of Increased Supply of Vitamin B_1 and Iron in the Diet of Children, II, Am. J. Dis. Child. **49**: 1185-1188 (May) 1935.

23. Bartlett, W. M.: An Analysis of Anorexia, Am. J. Dis. Child. **35**: 26-35 (Jan.) 1928.

24. Schlutz, F. W.: The Role of the Diet in the Treatment of Disorders of Older Infants and Children, Arch. Pediat. **42**: 347-362 (June) 1925.

25. Knott, Elizabeth M.: A Quantitative Study of the Utilization and Retention of Vitamin B by Young Children, J. Nutrition **12**: 597-611 (Dec.) 1936.

26. Himwich, H. E.; Goldfarb, Walter, and Cowgill, G. R.: Studies in the Physiology of Vitamins: XVII. The Effect of Thyroid Administration upon the Anorexia Characteristic of Lack of Undifferentiated Vitamin B, Am. J. Physiol. **99**: 689-695 (Feb.) 1932.

27. Cowgill, G. R., and Palmieri, M. L.: Studies in the Physiology of Vitamins: XXII. The Effect of Experimentally Induced Hyperthyroidism on the Vitamin B Requirement of Pigeons, Am. J. Physiol. **105**: 146-150 (July) 1933.

28. Du Bois, E. F.: Basal Metabolism in Health and Disease, Philadelphia, Lea & Febiger, 1936.

29. For a good discussion of the question of the etiology of exophthalmic goiter see Du Bois,[28] p. 348 et seq.

30. Cowgill, G. R.; Rosenberg, H. A., and Rogoff, J.: Studies in the Physiology of Vitamins: XVI. The Effect of Exercise on the Time Required for the Development of the Anorexia Characteristic of Lack of Undifferentiated Vitamin B, Am. J. Physiol. **98**: 589-594 (Nov.) 1931.

31. This suggestion is based on the report of clinical trials of the pure vitamin made by Goodhart and Jolliffe.[30]

week to build up the tissue reservoir would be wise; afterward the daily intake might well be not less than 15 international units per hundred calories.

Loss Through Excretory Channels.—Vitamin B_1 is a water-soluble substance and presumably, therefore, might be eliminated through the kidneys. Many workers have examined the urine for vitamin B_1 content with positive results. There appears to be little question that the amount of vitamin B_1 present in the urine is affected by the intake and the degree of "saturation" of the tissues.[32] It becomes of interest clinically to know whether vigorous diuresis can operate to affect the organism's need for vitamin B_1 by promoting loss of this dietary factor through the kidneys. That this is indeed possible was shown by the experiment which Rosenberg, Rogoff and I [33] performed on dogs. We observed that mere administration daily of large volumes of water sufficient to produce vigorous diuresis resulted in the appearance of anorexia due to vitamin B_1 deficiency in about one-half the time normally required; control experiments showed that such administration of water together with ample vitamin B_1 did not produce the anorexia.

Many clinical conditions are characterized by pronounced diuresis. It seems clear from these experiments on animals that whenever the clinician encounters pronounced diuresis he should take care to see that the patient receives a sufficiently large extra amount of vitamin B_1 to replace that which may be lost through the kidneys. A factor of safety of at least 2 seems to be warranted. This would mean a daily intake of not less than 20 international units per hundred calories for the average patient; still greater amounts would of course provide a greater insurance against shortage of the vitamin due simply to loss through the kidneys.

In the treatment of many clinical conditions it has become standard practice to administer large volumes of fluid. The data at hand from animal experiments suggest the wisdom of administering liberal amounts of vitamin B_1 along with the fluid. The minimum previously suggested based on a factor of safety of 2 might well apply if the patient is an adult; if he is a child the results of Knott [25] should be considered and much larger doses given.

Diarrhea is a common feature of many clinical conditions. It has long been known that vitamin B_1 is present in the stools of animals and that the amount present may vary with the composition of the diet.[34] It is theoretically possible that some of the vitamin present in the intestinal excreta came originally from within the organism, having been excreted through the intestinal wall. Two other possibilities are (1) that this vitamin represents the amount in the diet which failed to be absorbed and (2) that it has been produced by micro-organisms, having been either secreted by them into the surrounding medium or present in the stool as part of their bodies. Study of this problem is obviously of some clinical importance. From the experiments which Dann and I [35] performed on dogs it is clear that the effect of diarrhea is to decrease the absorption of an appreciable fraction of the ingested vitamin. In some instances the daily intake by mouth had to be increased as much as 70 per cent above the previous "normal" dose. No evidence was obtained suggesting the loss of previously absorbed vitamin by excretion through the intestinal wall. The diarrhea produced experimentally in our dogs would not be classified as severe; it certainly was not comparable to the pronounced diarrhea characteristic of numerous clinical conditions. If the condition we studied could produce a 50 to 70 per cent loss of ingested vitamin, it is clear that the more severe diarrheas must mean even greater losses. Two methods of treatment with vitamin B_1 suggest themselves; namely, administration by mouth of doses of the order of 20 international units per hundred calories or more, with the expectation of considerable loss due to failure of absorption, and parenteral administration of the pure vitamin in doses not less than about 15 units per hundred calories.

Clinical Trials with Thiamin Chloride.—Some tests with pure vitamin B_1 have already been reported. It is pertinent to my present theme to discuss these briefly.

Reference has already been made to the paper by Vorhaus, Williams and Waterman.[13] These investigators suggested that adult human beings should receive daily about 1 mg. of the pure vitamin. Goodhart and Jolliffe [36] made a study of the efficacy of various doses of thiamin chloride in the treatment of neuritis in alcohol addicts. They observed that the minimum effective dose was of the order of 4 mg. daily; from 10 to 20 mg. gave much more valuable results, and in some cases as much as 50 mg. had to be given in order to secure improvement. Weiss [37] reported tests indicating the value of the 20 mg. dose and the similar interesting observation that some patients, for unknown reasons, require doses as large as 50 mg. in order to show definite clinical improvement. To many clinicians these may seem to be relatively enormous amounts of the pure vitamin to administer. It is pertinent to point out that the results are similar to those obtained with experimental animals. For example, the minimum amount of vitamin B_1 required to cure a pigeon and keep it free from the critical symptoms of advanced B_1 deficiency for at least three days is from three to five times the daily minimum for maintenance of weight. In order to permit rapid restoration to normal body weight and well being, the bird must receive from ten to twenty or more times the daily minimum for maintenance of weight. Assuming that such a relationship holds for man and taking for calculation the daily requirement of the average man as suggested by Vorhaus and his associates,[13] namely, 1 mg. of thiamin chloride, one should expect precisely the results reported by Goodhart and Jolliffe [36] and by Weiss.[37]

In view of what is known about the ready excretion of vitamin B_1 through the kidneys, it seems to me that the clinician must for the present necessarily steer between the one extreme of giving such small daily doses that the patient can improve only very slowly and the other extreme of giving so much (particularly by the parenteral route) that a large part is lost through the kidneys before the tissues can properly absorb and store it. Until studies have been made of the capacity of both the deficient and the normal organism to store vitamin B_1 administered in various ways under properly controlled experimental conditions, one cannot say what

32. Papers dealing with this question are cited by Harris and Leong.[34]
33. Cowgill, G. R.; Rosenberg, H. A., and Rogoff, J.: Studies in the Physiology of Vitamins: XIV. The Effect of Administration of Large Amounts of Water on the Time Required for Development of the Anorexia Characteristic of a Deficiency of the Vitamin B Complex, Am. J. Physiol. **95**: 537-541 (Dec.) 1930.
34. For a detailed discussion of this point, with citations of literature, see "The Physiology of Vitamin B," this series.
35. Dann, Margaret, and Cowgill, G. R.: The Influence of Diarrhea on the Vitamin B Requirement, Arch. Int. Med., to be published.
36. Goodhart, R. S., and Jolliffe, Norman: Observations on the Effects of Vitamin B (B_1) Therapy on the Polyneuritis of Alcohol Addicts, J. A. M. A. **110**: 414 (Feb. 5) 1938.
37. Weiss, Soma: Personal communication to the author.

are the largest effective yet economical doses of the pure vitamin to use in clinical work. As soon as chemical methods have been perfected, permitting prompt analysis of the urine and the blood for their vitamin B_1 content, these important studies can and should be performed. In view of the activity on this problem in many laboratories, no doubt one may confidently expect soon to have the desired chemical tools for this work. In addition to yielding the information desired with respect to the best doses to use clinically, such studies should also lead to a clinical function test by which the clinician may not only confirm his impression that the patient is suffering from serious vitamin B_1 deficiency but may even detect moderate deficiency, which might be called "vitamin B_1 subnutrition." It is my belief that such researches will reveal vitamin B_1 subnutrition to be sufficiently common to warrant serious attention on the part not only of the practicing clinician but of all students of preventive medicine, public health and nutrition. The condition, if found, could be corrected readily by improvement of the diet.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PULICATION OF THE FOLLOWING ARTICLE. HOWARD A. CARTER, Secretary.

PHYSICAL THERAPY IN THE TREATMENT OF FRACTURES

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Widespread mechanization of industry, the increase in the employment of machinery in agriculture and the tremendous growth in the use of the automobile have completely changed the fracture picture in the United States in recent years. This change has been in two respects: (1) There has been a great increase in the number of fractures which occur annually; (2) there has been a marked increase in the number of serious fractures. The increase in the number of fractures is traceable to the greater opportunity for suffering trauma likely to cause fracture; the increase in the number of severe fractures is ascribable to the severe damage which results from the type of violence which machinery inflicts. As a consequence of these factors, the fracture problem today must be considered as having two aspects: a medical aspect which includes the recognition, reduction and immobilization of fractures, and an economic aspect which includes the length of time consumed in recovery, as measured by the period over which the individual is disabled or restricted in activity, and the final result, as measured by permanent residual disability. The effectiveness of fracture treatment today, then, cannot be based solely on securing union of the fractured bone or bones, for the rapidity with which the individual is returned to work and the extent to which function is restored must also be taken into consideration. Formerly, treatment of a fracture consisted in applying a splint and leaving it to nature to complete the cure; today, when we are dealing with more serious and more complicated fractures than in the past, a successful end result is dependent not only on adequate immediate treatment of the fracture but also on carefully planned and supervised after-care. Both of these requisites are necessary to meet the demands which the management of fractures today make on those who aspire to treat them and secure end results which will meet the critical judgment of public opinion and compensation commissions.

As this contribution deals with physical therapy as applied to fracture treatment, the immediate treatment of fractures may be briefly dismissed. It should suffice to say that at the present time it is generally conceded that a fracture should be treated as a surgical emergency and reduction under an anesthetic, local or general, carried out at the earliest possible moment and adequate fixation immediately applied. The reasons for this position are quite evident: immediate reduction minimizes local trauma and so cuts down the amount of traumatic exudate and infiltrate which accompanies any injury; it reduces to a minimum the undesirable muscle spasm always present; it favors the early reestablishment of blood and lymph circulation so important to healing. Following reduction, adequate splinting is necessary to insure continued maintenance of reduction and preservation of the conditions which make for rapid and complete healing.

The proper after-care of a fracture in the main consists of maintaining fixation of the fractured bone or bones until union has occurred, the early restoration of normal circulatory efficiency in the involved region and the building up of muscle tone and power so that normal use may be resumed at the earliest possible moment. Physical therapy, properly and intelligently employed, can be of inestimable service in this period of after-care in hastening recovery, but it is equally true that if physical therapy is used as a part of a routine without a true understanding of its purpose it may be a detriment rather than a help and even actually prolong the period of convalescence by inculcating in the patient a belief that recovery is to be attained by physical therapy alone and without effort on his part.

In order that physical therapy may be intelligently used in the treatment of fractures, it is necessary that its purposes and aims be clearly defined and recognized. Briefly stated, these are (1) promoting the early absorption of hemorrhage and traumatic exudate; (2) relaxation of muscle spasm to relieve pain and discomfort; (3) the reestablishment of normal circulatory conditions in the affected extremity, blood stream and lymphatics, which insures a more rapid and complete healing of the fracture; (4) building up in the muscles of the extremity that tone and flexibility so necessary to normal use. These effects, as has been emphasized by Clay Ray Murray,[1] are brought about by physical agents acting on the neuromuscular and neurovascular reflex mechanisms and through the stimulation of muscles by physical means or voluntary action.

Broadly speaking, there are four basic forms of physical therapy which may be employed in the treatment of fractures to accomplish the purposes catalogued; they are heat, massage, exercise and muscle stimulation. The first two of these secure their effect by bringing about muscular and vascular relaxation; the third and fourth are of chief importance in promoting venous and lymphatic flow and preparing the muscles to resume their normal active role as soon as use may be safely permitted.

1. Murray, C. R.: Surg., Gynec. & Obst. **56**: 479 (Feb., No. 2A) 1933.

HEAT

Heat as a physical agent may be applied in a number of ways such as by a therapeutic lamp, diathermy, electric pad and as radiant heat by the use of ordinary light bulbs set up in a cradle. Heat, to bring about the best results, should be employed at low intensity and over a considerable period. The most important effects secured from heat are analgesia, relaxation of muscles, relief of spasm and vasodilatation, and the longer these effects are maintained within reason the more productive they are. Heat of high intensity which produces a marked erythema cannot be tolerated long and is decidedly less beneficial.

MASSAGE

Massage has been described as the scientific manipulation of the soft tissues of the living body for therapeutic purposes. Massage is effective when applied by a trained person in a scientific manner; there is a vast difference between the skilled manipulation of a trained physical therapist and the rough and ready methods of the Turkish bath attendant or gymnasium rubber. Properly given, massage stimulates the nerve endings and activates sensory impulses of a wide variety which are important in relaxing muscular and vascular spasm and in relieving pain and discomfort. It also promotes the absorption of hemorrhage and exudate by improving blood and lymphatic circulation in a damaged extremity. The type of massage most useful in the treatment of fractures is light stroking massage; the movement should be slow, even, steady and always in the same direction; that is, lengthwise of the part in the direction of venous circulation. It should be remembered that massage employed to get rid of hemorrhage and exudate and reduce swelling acts by bringing about improved circulatory conditions and does not rub the exudate out of the part by pressure and force. Although all authorities do not agree, it is my opinion that light and very gentle kneading may also be used to advantage in fracture cases; such movements stimulate the intramuscular circulation and improve muscle tone.

MUSCLE STIMULATION

Muscle contractions may be produced by voluntary effort or by electrical stimulation. Voluntary contraction of muscle groups is incomparably superior to any form of artificial stimulation. Unfortunately, however, it is possible to utilize voluntary muscular activity in the treatment of fractures only to a limited extent until union is sufficiently strong. A very useful amount of voluntary contraction can usually safely be permitted and encouraged in most fractures earlier than is generally recognized under proper conditions of immobilization. Such limited voluntary use is made possible by employing fixation (traction or hinged splints) which holds the fractured bone or bones securely but permits the guarded use of adjacent joints, by the use of molded plaster splints instead of circular plaster dressings and also by having the patient "set" the muscles of the injured extremity a number of times each day; such "setting" of the muscles can be carried out even when the limb is completely encased in a plaster dressing. The extent to which muscle tone and flexibility can be maintained by carefully supervised daily exercise under proper conditions of fixation is often surprising.

Muscle stimulation by electrical stimulation, while not as satisfactory as active exercise, is nevertheless a useful therapeutic aid for maintaining muscle tone. Pemberton [2] has shown that whereas lactic acid is produced by contraction of muscles following volitional effort it does not arise at least in significant amounts as the result of stimulation of the muscle by faradic current. It is therefore probable that no form of electrical stimulation can be expected to produce the same type of muscle contraction as that which results from voluntary use. To avoid painful contraction some form of sinusoidal current may be used. The Council on Physical Therapy will furnish a design for making a faradic sinusoidal coil. This coil produces a sinusoidal current which will give graduated muscular contraction as described by Bristow and Smart. The value of these contractions is primarily the increase in circulation in the muscle. When electrical stimulation is utilized to bring about muscle contraction, it should be painless and not cause muscle spasm; for, when pain and spasm are produced, harm rather than good results.

Of equal importance with the measures used for applying physical therapy is their use at the proper time. Too often physical therapy is looked on as the final step in fracture treatment, as an agent to be used to restore function to atrophied muscles and stiffened joints which have been rigidly immobilized for weeks in a fixation dressing. While occasionally fractures are encountered in which the application of physical therapy is impossible until union is complete, to wait so long in the vast majority is losing valuable time and unduly prolonging convalescence. Theoretically, physical therapy may be used advantageously in all three stages into which fracture treatment is divided, the reduction period, the postreduction period, and in after-treatment.

THE REDUCTION PERIOD

While unquestionably massage and elevation may be used with advantage to reduce swelling and quiet muscle spasm preceding reduction and the application of definitive splinting, to carry out such measures in a routine way demands a special setup and personnel which is rarely available. Practically, then, physical therapy can play but a minor role in the reduction period. However, when for any reason it is impossible to proceed with the immediate reduction of a fracture, even if the delay is but a few hours, heat and gentle massage may be used to advantage. When fractures are accompanied by severe trauma to the surrounding soft parts with extensive hemorrhage, and reduction, open or closed, must be delayed for several days, heat and massage may be used with considerable benefit to improve the condition of the soft parts and permit the application of definitive treatment much sooner than would otherwise be possible.

THE POSTREDUCTION PERIOD

In the postreduction period physical therapy should assume a very important role in fracture treatment, but unfortunately it is during this period that it is most neglected. It is in the immediate postreduction period that exudate and hemorrhage which will become organized into scar tissue about the muscles, tendons, vessels and nerves and interfere with muscle action, normal circulation and joint movement can largely be removed by restoring as early as possible normal circulatory efficiency to the part. The stiffness, soreness and impaired function following a fracture are due in large part to

2. Handbook of Physical Therapy, page 73.

such scar tissue and its removal or at least reduction to a minimum lessens the discomfort incident to restoring function and materially shortens the period of convalescence. Furthermore, in the light of recent investigations, clinical and experimental, it seems clearly established that delayed union and nonunion are in the main traceable to interference with circulation at the fracture site so that early restoration of circulatory efficiency is our best safeguard against these catastrophes.

It is quite true that the application of physical therapy at this time is often difficult because the part is encased in a fixation dressing, but by the use in both bed and ambulatory cases of traction, which allows ready access to the part for physical therapy, through apertures in plaster dressings, by the use of hinged splints which allow movement in adjacent joints without disturbance of the fracture site, by the use of open splinting and by daily "setting" of the muscles, it is usually possible in most fractures to use heat, massage and muscle contraction throughout the period of fixation to the great advantage of the patient. So-called open splinting has in recent years been used more and more in the fixation of fractures; this permits the employment of physical therapy to a very satisfactory extent. By open splinting is meant using anterior or posterior or lateral molded plaster splints to replace circular plaster dressings when possible; as, for example, in Colles fractures, fracture of the patella and fractures of the ankle. Such splints afford ample exposure for physical therapy without disturbing the fracture. If a circular plaster dressing is used, it may be bivalved and the halves removed alternately for the application of physical therapy.

In addition to "setting" muscles in this postreduction period, active muscle contraction may be encouraged in several ways. Even with the forearm and arm encased in a plaster cast, if the fingers are free, the patient by squeezing and relaxing the grip on a rubber sponge can exercise the forearm and arm muscles extensively. Under the same conditions the shoulder and arm muscles will retain a large part of their tone and power if the shoulder joint is exercised regularly each day instead of holding the arm continually suspended and immovable in a sling. In Colles fracture, too often the elbow and shoulder joints are not moved and exercised, with the result that atrophy of the arm and shoulder muscles and limitation of movement in the elbow and shoulder joints prolong recovery while these avoidable conditions are being corrected. In leg fractures, systematic knee and hip exercises should be carried out each day to maintain muscle tone and strength in the thigh and hip muscles so that the extremity will be better prepared to function when weight bearing is permitted. In these ways and others which naturally suggest themselves, muscles and joints may be kept active and the general strength of an extremity maintained in a state of reasonable efficiency.

THE PERIOD OF AFTER-TREATMENT

It is in the period of after-care that physical therapy is most generally used in fracture treatment. It is unfortunate that it is so frequently improperly used. The objective sought for in the after-care of a fracture is the restoration of normal use to the injured part after union of the fracture is complete and splints and restraints have been removed. The restoration of the ability to use the damaged limb normally or at least satisfactorily is possible only when muscles are active and joints movable. Muscle tone, flexibility and power can be built up only by progressively increasing active use of the muscles by the patient; a joint stift or with limited motion can become movable and reasonably useful only through the establishment of muscular control of the joint by the patient. It should be clearly understood that the range of passive movement which can be obtained in a joint is no criterion of its usability, since only that degree of movement which the patient can control is usable. Furthermore, until voluntary control of joint motion is established, ankylosis or serious impairment of the range of joint motion of a more or less permanent character is possible. The role of physical therapy in the after-treatment of fractures may be stated then to be helping the patient to regain voluntary use of the muscles and voluntary control of impaired joints of the injured extremity. Heat, massage and muscle stimulation can reduce swelling, can decrease pain, soreness and stiffness in weak and degenerated muscles, can improve vascular and lymphatic circulation, can stimulate neuromuscular and neurovascular impulses, can in brief make it easier for the patient to use the impaired part and build up voluntary control, but they cannot make him well. The patient, in the last analysis, is master of his fate, and physical therapy is but the tool which enables him to carve out his recovery with the least discomfort, the greatest speed and to the fullest extent.

In seeking to help a patient to regain voluntary control of the muscles and joints following a fracture, heat and massage should be used to loosen up and render more pliable muscles and so reduce the stiffness and pain incident to attempts at movement. The movements which are used should be designed to bring about normal action of the joint in the most natural manner. Having the patient go through the motions of brushing the hair in elbow fractures, driving nails with a light hammer in fractures of the wrist, turning a door handle in fractures of the forearm, and reaching for objects placed at a gradually increased height in shoulder fractures illustrate the methods which may be used to encourage the patient to use the extremity in a normal manner.

While emphasis has been laid on the basic forms of physical therapy, heat, massage, and muscle stimulation, it should be stated that there are varieties of these basic forms which may be used with satisfactory effect. Contrast hot and cold baths, the whirlpool bath and the hot paraffin bath may be mentioned as examples. The use of balanced weights on pulleys and various devices which encourage the patient to use joints with a restricted range of movement are most helpful. Also many types of apparatus have been devised which are helpful and enable treatment to be given efficiently and comfortably. Too often such apparatus is expensive and complicated and its use is but vaguely understood, so that it is employed according to directions given in a printed pamphlet which accompanies it from the manufacturer, who rarely underestimates what it will do or the number of conditions it will benefit. By all means let us be ready to take advantage of any advances and improvements which science offers, but let us demand that the criterion of the therapeutic effect expected from any piece of apparatus be a scientific and medically correct one and not an empiric one determined by its maker. Helpful as apparatus may be, it

does not eliminate the element of judgment in how and when it should be used, nor can we blindly accept the statement of the maker as to its therapeutic effect. The accepted list of the Council on Physical Therapy of the American Medical Association is a reliable guide to apparatus which performs as claimed.

OCCUPATIONAL THERAPY

Any discussion of physical therapy in the treatment of fractures would be incomplete without mention of occupational therapy. Occupational therapy is a method of rehabilitation which is most useful in the treatment of fracture patients.

Occupational therapy is chiefly valuable because it supplies a real incentive for the patient to use the impaired part. A definite task is given him to perform and in spite of himself he becomes interested in completing it, with the result that he is inspired to renewed effort and unconsciously develops the attitude of mind which is necessary for recovery. Unfortunately, this form of physical therapy requires trained attendants and some apparatus so that its use is largely restricted to centers where these requisites are available; ingenuity, however, may work out simple tasks which may replace apparatus for rehabilitation training. Light carpentry, which requires the use of hammer, plane, saw and sandpaper, is available everywhere and is a useful type of occupational therapy for restoring function in the upper extremity. Gardening, painting and a variety of other simple occupational pathways may be utilized to improve joint motion, increase muscle strength and control, and above all build up the patient's morale and help him progress from the passive role of a recipient of physical therapy to an active role of one who is giving himself physical therapy. Occupational therapy is a very useful way of overcoming the subconscious resistance of the patient to normal use of an injured part for fear he will suffer a relapse. It is often a useful bridge over the hiatus between return of use and return to normal life and activity.

AMOUNT TO BE USED

Finally, some mention should be made of the amount of physical therapy which may be used. There is but one reliable guide as to whether physical therapy is being given properly and that is the reaction of the patient. Physical measures may be used up to the point of pain tolerance provided the painful reaction subsides within an hour or two. Physical therapy which produces painful reaction and muscle spasm that persists until the next treatment indicate too forceful or too prolonged treatment and both amount and duration must be reduced; persistence can lead only to resistance on the part of the patient, slowing up of recovery, and a disappointing result.

CONCLUSION

In the treatment of fractures physical therapy has a most important role. Used intelligently in the post-reduction period it will reduce scar tissue, infiltration of muscles, tendons and joints, maintain a satisfactory state of the circulatory apparatus and greatly reduce the period of after-treatment. Properly employed in the after-treatment it will help the patient to do his part, which is building up that voluntary active use of the impaired extremity which alone can restore function, hasten his recovery and complete the cure.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

(1) NUTRADIET APRICOTS PACKED IN WATER
(2) NUTRADIET PEELED APRICOTS PACKED IN WATER

Distributor.—The Nutradiet Company, a subsidiary of S & W Fine Foods, Inc., San Francisco.

Description.—Canned peeled and unpeeled apricots packed in water without added sugar.

Manufacture.—Tree-ripened apricots are inspected, washed and mechanically graded. The pits and blemishes are removed by hand, and fruit for the 8 ounce pack is cut and is peeled by submersion in a hot solution of caustic soda. The fruit is packed in cans and water is added. The cans are exhausted in the presence of steam, sealed and processed in boiling water.

Analyses (submitted by manufacturer).—(1) Moisture 90.4%, total solids 9.6%, ash 0.43%, fat (ether extract) 0.07%, protein (N × 6.25) 0.5%, crude fiber 0.3%, carbohydrates other than crude fiber (by difference) 7.6%, total acidity 0.7%. (2) Moisture 92.2%, total solids 7.8%, ash 0.38%, fat (ether extract) 0.06%, protein (N × 6.25) 0.4%, crude fiber 0.3%, carbohydrates other than crude fiber (by difference) 6.0%, total acidity 0.7%.

Calories.—(1) 0.33 per gram; 9 per ounce.
(2) 0.26 per gram; 7 per ounce.

Claims of Manufacturer.—For diets in which sweetened fruit is proscribed.

CELLU BRAND CARROT JUICE

Distributor.—Chicago Dietetic Supply House, Inc., Chicago.

Description.—Juice expressed from carrots packed without added water, salt or sugar.

Manufacture.—Selected mature carrots are washed, cooked, peeled, inspected, trimmed by hand, rinsed in cold water, ground to a fine pulp and pressed through a cloth. The resulting juice is strained, and filled into cans. The cans are heated, sealed and heat processed.

Analysis (submitted by manufacturer).—Moisture 93.2%, total solids 6.8%, ash 0.3%, fat (ether extract) 0.2%, protein (N × 6.25) 0.3%, reducing sugars as dextrose 1.6%, starch 2.6%, crude fiber 0.03%, carbohydrates other than crude fiber (by difference) 6.0%.

Calories.—0.27 per gram; 8 per ounce.

MRS. PALEY'S BABY FOOD—STRAINED SQUASH

Manufacturer.—Paley-Sachs Food Company, Houston, Texas.

Description.—Canned, sieved squash, slightly seasoned with salt.

Manufacture.—Yellow Crook Neck squash is inspected, washed, scrubbed with soft brushes and trimmed. The unpeeled squash is cooked under pressure without water until tender and strained in an atmosphere of steam. Salt is added and glass jars are filled, vacuum sealed and heat processed. No spray is used during the cultivation of the squash.

Analysis (submitted by manufacturer).—Moisture 90.5%, total solids 9.5%, ash 0.8%, fat (ether extract) 0.4%, protein (N × 6.25) 1.4%, reducing sugars as dextrose 5.2%, sucrose none, crude fiber 0.5%, carbohydrates other than crude fiber (by difference) 6.4%, iron (Fe) 0.0015%, phosphoric acid (P_2O_5) 0.094%, phosphorus (P) calculated 0.041%, calcium (CaO) 0.029%, calcium (Ca) calculated 0.021%.

Calories.—0.35 per gram; 10 per ounce.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 10, 1938

THE USES OF ANIMAL EXPERIMENTATION

The conservative attitude of the medical profession has both good and bad aspects—good when it refuses the use of untried drugs and unproved methods of therapy, bad when it permits medical progress to be attacked and maligned without defending itself. This attitude permits the public to be deceived concerning medical progress and sometimes causes the sick to seek relief from undependable sources which promise help. THE JOURNAL, by its continual exposure of "quack" medicines and falsely claimed "cures," has for many years done a great service to the public as a whole. More difficult to combat than such deliberately fraudulent claims, however, is the destructive work of the small but vociferous group opposed to experiments on animals. Their "crusaders" each year spend large sums of money in an attempt to stop all experimental work in the biologic sciences. In spite of the proved facts concerning the whole science of bacteriology, learned almost entirely through animal investigation, they claim that no good has come through man's utilization of animals in laboratory study.

The antivivisectionists refuse to recognize the great and continuous fall of the death rate in the infectious diseases, the remarkable extension of life [1] since the discovery of bacteriology and the beneficent progress of modern surgery as related to animal investigation. True, if their children acquire diphtheria they may use antitoxin, and if they develop appendicitis they may seek out a surgeon, but the relation of these therapeutic agents to research on animals is disclaimed. With these people argument and elucidation of the facts serve little purpose, for they twist the truth, misquote medical men now dead, and play on sentiment, not reason.

At present opponents of experiments on animals are proposing and advocating the so-called Humane Dog Pound Initiative in California, which will be voted on by a referendum in November. This cleverly constructed piece of legislation is apparently aimed against unnecessary suffering of dogs; actually it will make further animal investigation in the state of California difficult and hopelessly expensive. Such legislation, if passed, will seriously hamper further laboratory investigation in every state. Proper education of the public in (1) the methods of animal investigation and (2) the advantages that have accrued to the people from animal investigation should do much to bring about its defeat.

The articles now appearing in the *Country Gentleman* written by Paul de Kruif are a splendid assistance in this important task. In these articles de Kruif has exposed not only how much man has benefited but how much the animals themselves have benefited from laboratory investigation. The tremendous decrease in Texas fever of cattle, hog cholera, bovine tuberculosis and foot and mouth disease are striking examples of how the use of a few animals in laboratory investigation has lessened or completely done away with the suffering of hundreds of thousands of animals. De Kruif has sharply emphasized this advantage by stating the tremendous financial saving to our farmers. Naturally man cannot control human disease as completely as animal disease. The article in the September issue of the *Country Gentleman* depicts the possibilities for comfort and longevity which may follow the acquisition of exact knowledge through animal investigation. In succeeding issues the advantages which have accrued to man through similar animal experimentation will be made public.

This service to the continuance of medical research deserves recognition by the medical profession. Every physician may aid by calling the attention of patients and friends to these masterful statements.

1. Life expectancy in the United States increased from 46 to 61 from 1912 to 1937.

ANALYSIS OF FACTORS IN THE DECLINE OF TUBERCULOSIS

The mortality from tuberculosis has declined from about 30 per 10,000 of population to 5 or 6 in the last fifty years. What are some of the possible factors which have brought about this decline? In an analysis Wolff [1] distinguishes (1) a specific factor, (2) a hereditary factor, (3) a social factor, (4) a population factor and (5) the medical prophylactic factor.

The tubercle bacillus probably comes in contact with the entire population in urban areas; hence the bacillus alone is not sufficient to produce clinical illness, still less an epidemic. The decrease in mortality cannot be attributed to a natural protective inoculation, for, as Neufeld of the Robert Koch Institute says, natural inoculation with tuberculosis produces a limited immunity which is only relative and rapidly diminishes. The slow course of the disease clearly shows that the infection does not carry with it specific immunity. The relative immunity of which Neufeld spoke may be

1. Wolff, Georg: Tuberculosis and Civilization: Part II. Interpretation of the Etiological Factors in the Epidemiology of Tuberculosis, Human Biology **10**: 251 (May) 1938.

broken when resistance is reduced, as shown by the rise in the mortality rate during the World War.

A constitutional factor does play a part in tuberculosis mortality. In the same family under almost identical environment one may see some children succumb to tuberculosis while others do not. Inherited factors produce a constitution that plays an important part in the pathology of most diseases. A precise differentiation of what qualities predispose to tuberculosis or what kind of constitution affords protection against it has not been determined. The figures in Pearl's investigation show that, where one or both parents were actively tuberculous, virtually three fourths of the nontuberculous offspring have been in just as close contact with open cases as their brothers who acquired the disease. Some writers have revived the theory of selection by mortality, a view which Pearson used long ago to explain the decline in tuberculosis mortality. Natural selection by the early death of the tuberculous does not sufficiently explain the epidemic course. The reproductive powers of the tuberculous in the majority of cases continue nearly until death or the usual age and thus they maintain their stock.

Among German writers, Fritz Lenz came to the conclusion that blond types are less affected by tuberculosis than brunets. Lenz writes that tuberculosis has been a factor in producing in northern Europe, which is poor in sunlight, the blond clear-skinned type, while in the southern part, where the blond type is more susceptible to malaria, there has been a change in favor of brunets. Thus Lenz explains the frequency of blond Jews in central Europe by the selective action of tuberculosis in favor of blonds. Wolff believes that more exact knowledge of the epidemiologic data suggests that the lower mortality of Jews from tuberculosis is correlated with economic factors.

The social factor is probably the most important factor in the downward trend of tuberculosis. It is so important and complex that Wolff divides it into elements. The factor of economic well being can be analyzed into such parts as housing, occupation, nutrition, size of family and hygienic education, all of which are related. National nutrition is of great importance. The mass experiments in nutrition provided by the World War speak eloquently on this point. As early as 1915 in England and Germany the tuberculosis mortality rate was higher than in 1914. If nutrition has the main role in increasing tuberculosis mortality during the World War, improvement in nutrition over the last fifty years has had a part in the decline.

Various investigators have shown that occupation plays a part in tuberculosis mortality. In the standardized mortality figures in an occupational study among males in England and Wales during 1921-1923, the tuberculosis mortality for agricultural workers was found to be 96, for brewers 115, for bricklayers 127, for cotton spinners 175, for shoe factory workers 298 and for tobacco factory workers 326. Shoemakers are not exposed to any particular hazard and yet they show a high mortality. That is because persons enter this occupation who are physically unfit for other occupations. For the same reason bricklayers have a relatively favorable mortality. Bricklaying is not an occupation for men of poor physique. In spite of the risks of industrial work, the average tuberculosis mortality in industrialized states is lower than it is in the agricultural states, where there is a lower standard of hygiene and of living. The better social, economic and hygienic conditions in the industrial states, together with better medical treatment, probably is the basis of this difference. Industrialization has brought with it not only dust and industrial diseases but also an elevation of the national well being which much overcompensates the disadvantages of industrial work.

Closely connected with industrialization has been a biologic change in the industrialized states reflected in a decline in the birth rate. With a smaller family the average income per head increases whether the wages are increased or not. The decline in birth rate necessarily effects a change in the structure of the family. Reduction in size of the family increases the proportion of the family budget available to each member. There is even a direct influence on the possibility of infection, for the virus in a smaller family has a smaller field of operation.

In a study of the mortality of young adults from tuberculosis, Bradford Hill concluded that the level of mortality in the different rural districts was influenced by the movement of the population, particularly internal migration. The urban districts which have attracted young people showed a decrease in mortality, while the districts that have lost population tended toward increased mortality in young adults. The success of medical treatment and medical care of people generally forms a part of the social environment, and practice of medicine in the field of tuberculosis ranks high.

Thus a critical examination of statistics shows that of all the factors influencing the epidemic march of tuberculosis the decisive factors are the socio-economic and sociobiologic, combined with changes in the standard of living brought about by industrialization. The tuberculosis mortality rate has fallen greatly because particular strata of the working classes are now as well to do as or even better off than many of the middle classes. Compared with these the natural environment—climate, sunshine, soil—is of minor importance.

A national campaign against tuberculosis, in Wolff's opinion, should have as its goal further improvement of the social environment so that persons infected by tuberculosis will not become victims of the disease. It should never be the task of the physician to breed human beings refractory to tuberculosis, ignoring all other mental and physical hereditary qualities. Further extension of the process that has been at work in the last fifty years may yet bring tuberculosis to the vanishing point.

ETHICS OF AMERICAN BAR ASSOCIATION GOVERNING SIMULTANEOUS PRACTICE OF MEDICINE AND LAW

The Committee on Professional Ethics of the American Bar Association in a recent opinion [1] holds that a person legally authorized to practice law and medicine may practice the two simultaneously without violating the canons of professional ethics of that association but that he must recognize in every case the particular capacity in which he is acting. In a previous opinion [2] the committee held unethical a statement on a lawyer's letterhead announcing that he was a specialist in "medical-legal" law.

In its recent opinion the committee says that a person practicing law and medicine simultaneously offends against the canons of professional ethics if in correspondence connected with his practice of either profession he uses a letterhead that contains the two appellations "attorney at law" and "doctor of medicine" or shows that he has the degrees of LL.B. and M.D. or contains the phrase "medical jurisprudence." In fact, in the opinion of the committee a lawyer cannot ethically place on his professional letterhead any indication of any degree conferred on him. A lawyer-physician who is establishing offices for the practice of law and medicine jointly cannot, in the opinion of the committee, without violating the canons of professional legal ethics, send out announcements of the establishment of such offices at a specified address for the practice of both law and medicine. A person practicing law and medicine coincidentally cannot ethically send announcements even to members of the legal profession stating that he is specializing in medical jurisprudence unless he is offering that specialized service directly and exclusively to lawyers. A lawyer engaged in "a specialized legal service" directly and exclusively to other lawyers may ethically publish in legal periodicals and like publications a brief dignified notice of that fact, in language indicating that it is addressed to lawyers alone, when such a notice will afford convenient and beneficial information to lawyers desiring to obtain such services. The Committee on Professional Ethics, however, refrains from expressing any opinion as to whether a lawyer acting as counsel to other lawyers in matters involving a knowledge of medical jurisprudence is or is not "rendering a specialized legal service" within the meaning of this rule. It is not inconsistent with the canons of legal ethics, in the opinion of the committee, for a lawyer who is opening offices for practice as a lawyer and as a physician simultaneously, to send separate announcements of the opening of such offices to those with whom he has previously established personal relations within the meaning of the canons of legal ethics, but the announcement of the opening of his law office and the announcement of his opening of an office for the practice of medicine, if sent to the same person, should not be sent under the same cover.

The opinion rendered in the present instance was rendered in response to a request from a committee on professional ethics of a state bar association and pursuant to authority vested in the Committee on Professional Ethics of the American Bar Association to express its opinion concerning proper professional conduct when consulted by any member of the bar or by any officer or committee of a state or local bar association. The committee is authorized furthermore to consider on its own motion or on a complaint information as to the professional conduct of any member of the association and, after a hearing, to recommend to the Board of Governors the public or private censure, suspension or expulsion of an offending member. The board may censure, suspend or expel a member for cause. The published opinion of the committee in the present instance does not show whether disciplinary action has been taken or is contemplated in any specific case because of the misconduct of any member of the association.

1. Opinion 183, May 10, 1938, American Bar Association Journal **24**: 673 (Aug.) 1938.
2. Opinion 159, May 5, 1936, American Bar Association Journal **22**: 503 (July) 1936.

Current Comment

NEUROSES AND SOCIO-ECONOMIC CONDITION

The effect of social conditions on the incidence of disease is well recognized. In a recent contribution Neustatter [1] reports three groups of fifty families studied to determine the role of socio-economic circumstances on the production of neuroses. The first group comprised poor working-class families in southeast London, picked at random. The second was chosen from the parents of children attending the council schools in southeast London but composed principally of small professional and clerical workers with modest incomes, and the third was a group of "well-to-do" families from a northwest London suburb of middle class and economically more comfortable than the other groups. The information was obtained from questionnaires directed to parents and from personal interview. The specific purpose was to determine whether there was any relationship between the socio-economic status of the parents and the frequency of various neuroses, including night terrors, depression, unsociability and aggressiveness. Although the dangers of the questionnaire method were fully recognized, the results appear to be significant. A clearcut physical difference between the two groups of poorer children and the "well-to-do" was noted: one third of the children in the poorer class showed "poor physique," and pallor and tired and lined facies were found practically only in the poorest group. In the poor group of fifty families, twenty were badly housed and thirty had insufficient money for food. Only 20 per cent of this group however were nervous and 56 per cent were not, as compared with 30 per cent nervous and 36 per cent not in the fifty "well-to-do"

1. Neustatter, W. L.: The Effect of Poor Social Conditions in the Production of Neuroses, Lancet **1**: 1436 (June 25) 1938.

families. It was concluded therefore that poor social conditions are not in themselves a direct determinant of nervousness in children. Furthermore, case histories were obtained showing that even extremely bad social conditions leave children unaffected psychologically provided the psychology of the home situation is good. Social circumstances do at times affect children through the parents but surprisingly little, and then generally when the parents are already nervously predisposed. A statistically significant relationship between the presence of a worrying disposition in the parents and the presence of anxiety and a tendency to worry in the children irrespective of class was demonstrated. Poverty, therefore, seems to decrease rather than to increase the incidence of many neuroses.

ACCIDENT STUDIES IN KANSAS

As lives have been saved from disease they have been sacrificed to accidents. The modern safety movement is an answer to the challenge of accidental death and injury. Among the most comprehensive studies of accidents have been those carried out and published annually by the board of health of the state of Kansas.[1] The Kansas State Board of Health has prepared a special form for reporting accidental deaths. This work was begun in 1932. The current report for 1937 is the sixth annual publication of the data procured through these special reports. The reports are procured with the assistance of sheriffs, police officers, physicians, coroners and others. The resulting data are as complete a record of accidental deaths as is available on a statewide basis anywhere. Accidents ranked fifth in causes of death in Kansas, preceded only by heart disease, cancer, cerebral hemorrhage and chronic nephritis. In 1934 they ranked fourth in importance but for the last three years have ranked fifth, with a total of 1,492 accidental deaths reported in 1937, the lowest number since 1932. The death rates per hundred thousand of population have varied from 54.6 in 1932, the first year of the intensive study, to a high of 68.3 in 1936 and a rate of 57.3 in 1937. The lowest rate during the six years was 56.1, in 1933. The decline of 339 during 1936 was accounted for by a reduction of ninety-five in automobile deaths, or around 20 per cent, and of 244 in all other accidents, or about 25 per cent. The largest number of deaths was due to automobiles (447), the second to falls (367), the third to drowning (eighty-eight), the fourth to burns and the fifth to railroad trains but involving automobiles. Other important causes were trauma by firearms, excessive heat, electric currents, poisonous gases and other accidental poisonings. The report contains extensive tabulations classifying accidental deaths by causes, by years, by months, by occupations and by counties. Lists of unusual fatal accidents are interpolated in the report and are interesting as evidence of two common underlying causes of all accidents, namely carelessness and panic. The rising toll of accidental deaths bids fair to eclipse the saving made through advances in medicine and public health.

1. Kansas Accidental Deaths, 1937, published by the Kansas State Board of Health; 16 pages; planographed; gratis to health or safety officials.

Association News

SPECIAL SESSION OF HOUSE OF DELEGATES SEPTEMBER 16, 1938

All meetings of the special session of the House of Delegates of the American Medical Association to be held in Chicago September 16 will be in the Red Lacquer Room at the Palmer House. Delegates who wish to have accommodations at the Palmer House should make reservations immediately. The first meeting of the House of Delegates will be called to order at 10 a. m., Chicago daylight saving time, Friday, Sept. 16, 1938.

STATE SECRETARIES AND EDITORS TO ATTEND SPECIAL SESSION OF HOUSE OF DELEGATES

The Board of Trustees has requested the secretaries of the constitutent state medical associations and the editors of state medical journals to attend the special session of the House of Delegates of the American Medical Association to be held at the Palmer House in Chicago September 16.

The regular Annual Conference of Secretaries of Constituent State Medical Associations will not be held this year.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Proposed Activities of State Association.—An outline of medical activities in Alabama is presented in a letter recently mailed to members of the state medical association by the president, Dr. Seale Harris, Birmingham. It is hoped that the monument to Dr. James Marion Sims, pioneer surgeon (1813-1883), approved at the last annual session of the association, will be ready for unveiling at the next meeting in April. An artist has been employed to prepare the model for and to supervise the construction of the monument, which will be in the form of a bronze statue to be placed on the state capitol grounds. Members are urged to participate actively in the movement to establish a four year medical school in Alabama and to cooperate to the fullest extent in the survey on medical care now under way by the American Medical Association. An appeal is also made to each physician to bring new members into the society and to take complete advantage of the opportunities offered by the society by attending scientific sessions and by use of facilities. Pointing out that each of the sixty-seven counties in the state has a full time health officer, Dr. Harris emphasizes the need and expense of an adequate health department and recommends that physicians throughout the state discuss with the representatives of the state legislature the necessity for continued support in this field.

CALIFORNIA

Health of Mexicans in California.—The state department of health has published a statement on the health of Mexicans in California over a ten year period. Because the number of Mexicans in the state now is not known, the figures noted in the 1930 federal census are used: 368,013 Mexicans, or 6.5 per cent of the total population of the state, which at that time was 5,677,251. In 1930 there were 14,472 Mexican births registered, 17.2 per cent of the total number of births in the state (84,382); in 1933 there were 10,857, or 14.4 per cent of the total, and since that time there has been an annual increase, the total reaching 12,173 in 1937. During the ten years 1928-1937 there has been an annual average of 12,700 Mexican births in this state, or 15.2 per cent of the total. The infant mortality rates among Mexicans are particularly high; during the ten year period one third of all infant deaths in California were in Mexicans, giving an annual average of 1,556 of these deaths. Typhoid and diphtheria are highly fatal to Mexicans; 20 and 24 per cent, respectively, of all deaths in the state from these diseases during the past nine years were in Mexicans. Pneu-

monia and influenza caused 17 and 12 per cent, respectively, of all deaths among Mexicans; 22 per cent of all deaths were from tuberculosis, and 18 per cent of all deaths in childbirth from 1929 to 1937, inclusive, were among Mexican mothers.

DELAWARE

Nemours Foundation for Crippled Children.—Construction will begin in October on a new 100 bed hospital for crippled children within the Nemours Estate near Wilmington under the auspices of the Nemours Foundation for Crippled Children. The tentative date for the opening of the hospital is the fall of 1939, according to the *Delaware State Medical Journal*. Children up to the age of 16 years will be admitted to the hospital but may be kept for educational purposes to an older age if necessary. Carrying out the terms of the will of the late Mr. Alfred I. du Pont, the Nemours Foundation for Crippled Children was incorporated Sept. 2, 1936, with the following trustees: Mrs. Alfred I. du Pont, her brother Mr. Edward Ball, and Mr. du Pont's son-in-law Col. Reginald S. Huidekoper. A medical advisory board was appointed consisting of the following members:

Dr. Thomas R. Brown, associate professor of medicine, Johns Hopkins University School of Medicine, Baltimore, chairman.
Dr. Robert B. Osgood, John B. and Buckminster Brown, professor emeritus of orthopedic surgery, Harvard University Medical School, Boston, secretary.
Dr. Philip D. Wilson, clinical professor of orthopedic surgery, Columbia University College of Physicians and Surgeons, New York.
Dr. George E. Bennett, associate professor of orthopedic surgery at Johns Hopkins.
Dr. DeWitt B. Casler, associate in gynecology at Johns Hopkins.
Dr. William T. Graham, professor of orthopedic surgery, Medical College of Virginia, Richmond.
Dr. Beverley R. Tucker, emeritus professor of neuropsychiatry, Medical College of Virginia, Richmond.
Dr. Michael Hoke, Beaufort, S. C., formerly chief surgeon at Warm Springs Foundation, Warm Springs, Ga.

A four point program has been adopted by the advisory board: medical care of the crippled child, which begins with the construction of the new hospital; education of the crippled child; research on problems relating to the crippled child, and graduate instruction for persons interested in this field. Concerning the education of the crippled child, it is proposed, after the hospital is opened, to build several cottages, separate from the hospital, for the convalescent school children. A school building will be erected later. In the educational program emphasis will be placed on the vocational education of the child over 14 years of age. Following this training it is hoped to find permanent employment for these children. All types of training will be offered, the child's physical handicap to be the deciding factor. Primary and secondary school education will be given to the younger children. The research program will include both laboratory and clinical problems. The original laboratories will be for biochemistry and bacteriology with facilities for pathology. These will be staffed by a personnel particularly interested in research problems and a certain number of hospital beds will be available for the research division so that the clinical and laboratory work may be coordinated. For the coming year four research fellowships have been established in selected medical centers for the study of problems directly related to crippling diseases in childhood. Courses of graduate instruction in orthopedic work will be established as soon as warranted by the organization of the hospital and the institution at large. At the beginning only crippled children from the state of Delaware will be admitted; it has been estimated that there are about 200 in need of hospital care. According to the state medical journal, the chief difference between this and similar institutions is the emphasis on vocational education of the crippled child and on research. Dr. Alfred R. Shands Jr., formerly associate professor of surgery in charge of orthopedics, Duke University School of Medicine, Durham, N. C., was appointed medical director of the foundation in June 1937.

ILLINOIS

New Building for St. John's Hospital.—A new building to replace the central structure of the present St. John's Hospital, Springfield, is now under construction. When completed, the main part of the unit will be twelve stories high and cost $1,200,000. The first floor will accommodate the physical therapy department, kitchens, coffee shop, pharmacy and central sterilizing department as well as the lobby and waiting rooms. The second to seventh floors will contain rooms and wards, while the eighth floor will be devoted to infectious diseases. The ninth floor will contain the septic surgical department, surgical dressing and specialists' departments, separate provisions being made for treatment of the eye and throat, dental work and bronchoscopy under both local and general anesthesia. The operative floor is the tenth with laboratories on the eleventh. Solariums and storage rooms occupy the twelfth floor. The thirteenth and fourteenth floors cover only a small part of the building area and are used for the mechanical equipment. Rev. J. L. Gatton is director of the hospital.

Chicago

Coordinating Committee on Cancer.—The University of Chicago has appointed a committee on cancer to correlate its program of research and the clinical treatment of cancer. According to the announcement the creation of the committee, which will operate virtually as a cancer institute, was made necessary by the comprehensive nature of modern investigation of the disease. The new committee will correlate all basic research with the efforts of the clinical departments and serve as a clearing house for all the university investigators in nine departments; it will also advise the administration as to needs and policies of the general program. Members of the committee include:

Dr. Alexander Brunschwig, chairman of the committee.
Dr. Fred L. Adair, chairman of the department of obstetrics and gynecology and chief of staff of the Chicago Lying-In Hospital.
Dr. Percival Bailey, professor of surgery (neurosurgery) and neurology.
Arthur H. Compton, Ph.D., Charles H. Swift distinguished service professor of physics.
Dr. George F. Dick, chairman of the department of medicine.
William D. Harkins, Ph.D., Andrew MacLeish distinguished service professor of chemistry.
Dr. Paul C. Hodges, professor of roentgenology.
Thorfin R. Hogness, Ph.D., professor of chemistry.
Fred C. Koch, Ph.D., chairman of the department of biochemistry.
Ezra J. Kraus, Ph.D., chairman of the department of botany.
Dr. Dallas B. Phemister, chairman of the department of surgery.
Maud Slye, Sc.D., associate professor of pathology.
Dr. Paul E. Steiner, assistant professor of pathology, secretary.
Dr. Harry Gideon Wells, chairman of the department of pathology.

Announcement was also made that the university had received a total of $11,750 in grants and gifts for work on cancer. Three grants totaling $7,500 were from the National Advisory Cancer Council of Washington and will facilitate research on the influence of cancer on stomach secretions, research on hormones and on chemical substances in cancer tissues. The International Cancer Research Foundation made a grant of $2,000. The Educational Association on Cancer has given the university $2,250 to establish a lectureship on cancer and bring noted scientific speakers to the quadrangles.

INDIANA

State Medical Meeting at Indianapolis.—The eighty-ninth annual session of the Indiana State Medical Association will be held at the Murat Temple, Indianapolis, October 4-6. Out of state speakers will include:

Dr. Henry F. Helmholz, Rochester, Minn., Recent Advances in Pediatrics as Applied to General Practice.
Dr. Charles A. Elliott, Chicago, Management of Pneumonia.
Dr. Henry S. Ruth, Merion Station, Pa., Physical Signs of Inhalation Anesthesia.
Dr. Walter E. Dandy, Baltimore, Ménière's Disease.
Dr. Frank E. Adair, New York, Tumors of the Breast.
Dr. Everett D. Plass, Iowa City, Obstetrics for the General Practitioner.
Dr. Herman L. Kretschmer, Chicago, Cystitis in Women and Female Children.

Among the Indiana physicians on the program are the following:

Dr. Edwin Rogers Smith, Indianapolis, Metrazol in the Treatment of Schizophrenia.
Dr. Wayne R. Glock, Fort Wayne, Treatment of Hip Fractures.
Dr. Frank W. Ratcliff, Lafayette, Nupercaine Combinations Used in Spinal Anesthesia—Eight Year Review.
Dr. Charles N. Combs, Terre Haute, Cyclopropane—A Résumé of Personal Experience.

A symposium on syphilis will be held Wednesday afternoon with the following speakers: Drs. Wemple Dodds, Crawfordsville; Minor W. Miller, Evansville; Floyd R. Nicholas Carter, South Bend, and Clifford L. Williams, Logansport. Dr. Herman M. Baker, Evansville, will preside at the annual banquet Wednesday evening when the certificate of merit will be presented posthumously to Dr. Edmund D. Clark, Indianapolis, president in 1937 of the state medical association. The speakers will be Drs. Rock Sleyster, Wauwatosa, Wis., President-Elect, American Medical Association, whose subject is not announced, and George E. Vincent, LL.D., Greenwich, Conn., on "The Pain of Thinking."

KENTUCKY

Personal.—Dr. Otis R. Lynch, Brandenburg, has resigned as health officer of Meade County to enter private practice in Marengo, Ind.——Dr. Ollie M. Goodloe, Maysville, has resigned as health officer of Mason County to become field director of the state board of health for Eastern Kentucky, with headquarters in Lexington. Dr. Chadwick W. Christine, Louisville, has been appointed to succeed Dr. Goodloe.

Society News.—Dr. J. Watts Stovall, Grayson, addressed the Carter County Medical Society, Olive Hill, recently on "Care of the Indigent Sick and Responsibility of the Government for the Payment for This Care."——The Rockcastle County Medical Society was recently reorganized with Dr. Nevil M. Garrett, Brodhead, as president; Dr. Thomas A. Griffith, Mount Vernon, vice president, and Dr. Lee Chesnut, Mount Vernon, secretary. Dr. Eugene J. Brown, Stanford, addressed the June meeting on diagnosis.

MAINE

Dr. Bragdon Honored at State Fair.—Dr. Fred A. Bragdon, Springvale, was honored August 25 when a day at the state fair in Acton was dedicated to him in appreciation of his services to the community. A veteran race horse owner, he was presented with a gold horse mounted on a marble slab and a check with which to purchase a "horse of your own selection," newspapers reported. Mrs. Bragdon received flowers. Following his graduation from Bowdoin Medical School, Brunswick-Portland, in 1883, Dr. Bragdon practiced in Shapleigh for about nine years, then moved to Lynn, Mass., for one year. Then he moved to Springvale, where he has practiced ever since. He was presented with the fifty year medal by the Maine Medical Association five years ago. He will be 80 years old in October. Gov. Lewis O. Barrows was among the speakers at the ceremony.

MICHIGAN

Study Program.—The Flint department of health sponsored a study program at Mott Camp, Flint, September 6-10. The first three days were devoted to discussions of public health activities, the last two to a study by nurses of the health department's technic and procedure. The entire personnel of the department, including physicians, nurses, sanitarians, health educators, laboratory technicians and clerks, stayed at the camp the first three days, while only the nurses remained for the last two. The speakers included Drs. Don W. Gudakunst, Lansing, state health officer; Henry Cook, president of the state medical society, and Bernard W. Carey, Detroit, medical director of the Children's Fund of Michigan.

Upper Peninsula Meeting.—The Upper Peninsula Medical Society held its annual meeting at Sault Ste. Marie August 18-19. Hon. Paul Adams, mayor, gave the address of welcome and speakers on the scientific program included:

Dr. Walter G. Maddock, Ann Arbor, Peripheral Vascular Diseases with Special Reference to Varicose Ulcers and Varicose Veins.
Dr. Carl E. Badgley, Ann Arbor, Back Pain.
Dr. Floyd H. Lashmet, Petoskey, Nephritis and Pyelonephritis.
Dr. William W. Bauer, Director, Bureau of Health Education, American Medical Association, Chicago, Relationship of County Health Units to the Profession.

Dr. James D. Bruce, Ann Arbor, director of postgraduate medical education, University of Michigan, Ann Arbor, addressed the banquet in the evening on "A Doctor's Inventory." Officers elected at the meeting included Drs. Albert H. Miller, Gladstone, president, and Stephen Mason, Menominee, vice president. The secretary will be chosen by the Escanaba group, which will act as host to the society next year.

MINNESOTA

Alumni Reunion.—The University of Minnesota Medical Alumni Association will hold its annual business meeting at a luncheon at the University Hospitals October 14, the day preceding the homecoming game with Michigan. Dr. Harold G. Benjamin, Minneapolis, has been appointed chairman of the program committee for the clinical presentation at the hospitals Friday morning.

"Miracle Man" Forfeits Bond in Minnesota.—The bail bond of J. A. White, alias Professor White, alias Dr. White, was ordered forfeited by Judge F. A. Alexander of the municipal court at Owatonna, and a bench warrant was issued for his arrest August 3, following his failure to appear in court for a preliminary hearing after his arrest for practicing healing without a basic science certificate. The order means that the bondsmen will have to pay Steele County $750. White was arrested July 24 at Ladysmith, Wis., following a joint investigation of his activities by the Minnesota State Board of Medical Examiners and Steele County. He waived extradition and was returned to Owatonna, where he was released on bond. White arrived in Steele County in the latter part of March driving a Packard car with Georgia license plates, according to the state board of medical examiners. Because of a bad snowstorm, he asked for shelter at the home of farmers a few miles west of Owatonna. He represented himself as "Professor" White and also as "Dr." White; he claimed to be a psychoanalyst and in a few days was diagnosing ailments and suggesting pills, tablets and capsules, charging each patient from $6 to $40. The medicine was purchased by White at drugstores in Owatonna for a fraction of the amount he charged. When White's fingerprints were sent to the federal bureau of investigation at Washington, Sheriff E. T. Helgeson of Steele County was notified that White was wanted at Jesup, Ga., for swindling and practicing medicine without a license. White in the meantime had secured his release at Owatonna on bond and started for parts unknown. He also had been arrested in Detroit in 1918 on a charge of "larceny by trick." He claims to have been born in 1858 but appears to be between 60 and 65 years of age; he is accompanied by Mrs. White. Newspapers reported in 1922 that the "miracle man," "Prof." J. A. White, was ordered to leave Shelbyville, Ind.

MISSISSIPPI

Society News.—At a meeting of the Coast Counties Medical Society in Biloxi July 6, Dr. Frank O. Schmidt, Ocean Springs, discussed "Volvulus of the Cecum."——The North Mississippi Medical Society was addressed in New Albany July 20 by Drs. Joseph E. Green, Laurel, on "Vital Problems Concerning the Mississippi Medical Association"; James P. Wall, Jackson, "Louis Pasteur, the Father of Modern Medicine," and Seale Harris, Birmingham, Ala., "The Relation of the Endocrine Glands to Hyperinsulinism."——The Hattiesburg Clinical Society was organized recently with Drs. Theophilus E. Ross Jr. as president; Richard H. Clark, vice president, and Lawrence B. Hudson Jr., secretary, all of Hattiesburg.

NEW JERSEY

President of the State Medical Society.—Dr. Stuart Zeh Hawkes, Newark, writes that his father, Dr. Edward M. Zeh Hawkes, Newark, was named president-elect of the Medical Society of New Jersey at the annual meeting in May. A news item in THE JOURNAL August 6 gave the son's name as the officer elected.

State Society Sponsors Clinical Conference.—The Medical Society of New Jersey will sponsor a clinical conference October 6-7 in the various hospitals of Newark and Essex County. Dr. Harrison S. Martland, chief medical examiner of the county, will conduct a clinicopathologic conference at the Academy of Medicine, Newark, in the afternoon of the first day. Sessions Friday will be held in seventeen hospitals and medical centers by 179 members of the staffs.

NEW YORK

Typhoid Closes Children's Camp.—Three cases of typhoid recently appeared in a camp for children operated by the Heckscher Foundation for Children of New York at Putnam Valley in Putnam County near Peekskill. On the advice of the state department of health, about 650 children who had been in the camp since July 1 were returned to their homes. Investigation gave evidence that the source of the disease was in a polluted brook from which the water supply was pumped. The water was chlorinated and passed through filters, but it is believed that the chlorine demand rose greatly following heavy rains in July and permitted incompletely chlorinated water to enter the supply, according to a report in *Health News*.

New York City

Report on Blood Banks.—About 2,000 persons have donated blood for "blood banks" established in the city hospitals in June, the commissioner of hospitals recently reported. There have been more than 600 in Brooklyn alone. The banks were begun this year when it became apparent that funds for hiring professional donors would be exhausted before the year was over. In 1937 the city expended $171,599.86 for this purpose.

Automobile Deaths Reduced.—Automobile accidents caused 414 deaths in the first six months of 1938 in New York City, nineteen less than the number in 1937. The number of injured also decreased from 15,317 to 14,334. Fifty-five children were killed, compared with sixty-nine in the first six months of last year. Carelessness in crossing against traffic lights caused the deaths of 109 and jaywalking caused seventy deaths. Collisions between vehicles caused sixty-three deaths and injuries to 5,357. Other causes were: running off sidewalk into roadway, twenty-six deaths; reckless driving, twelve; skidding, twelve; falling from moving vehicles, seven, and vehicles turning corners, eight. Under the cause "driver of vehicle intoxicated" there were two deaths and sixty-six were injured.

NORTH CAROLINA

Venereal Disease Clinic at Charlotte.—The city of Charlotte and Mecklenburg County, in cooperation with the state board of health, has established a venereal disease clinic, with Dr. Paul J. Chambers, Charlotte, as director. Dr. Leon A. Beardsley, Waverley, health officer of Humphreys County (Tenn.), will be in charge temporarily while Dr. Chambers takes a special course in syphilis control at Johns Hopkins University School of Medicine, Baltimore.

PENNSYLVANIA

District Meeting. — The annual meeting of the Ninth Councilor District of the Medical Society of the State of Pennsylvania was held in Punxsutawney September 8. Speakers at the morning session were Drs. Benjamin F. Coe, Indiana, and Joseph C. Lee, Clymer, on "Backache"; Thomas Craig McKee, Kittanning, "Gynecologic Treatment in General Practice"; Joseph M. Lukehart, Punxsutawney, "Acute Head Colds, Complications and Treatment." At the afternoon session Dr. William J. Armstrong, Butler, discussed the American Medical Association's survey of medical needs; Dr. Chauncey L. Palmer, Pittsburgh, "What We May Expect in Medical Legislation," and Dr. Elmer Hess, Erie, "The Physician in Self Defense: How Shall He Defend Himself?"

TENNESSEE

Physician's Library Goes to Hospital. — The medical library of the late Dr. Victor D. Holloway, Knoxville, has been presented to the Knoxville General Hospital by his widow and daughter. The library, containing 525 volumes and 137 issues of medical journals, has been placed in a special alcove adjoining the hospital record room. Dr. Holloway died June 24.

Society News. — Dr. William D. Haggard, Nashville, among others, addressed the Hardin, Lawrence, Lewis, Perry and Wayne Counties Medical Society in Clifton July 26 on "Diagnosis of Surgical Diseases of the Rectum with Special Reference to Cancer." The society met June 28 at Shiloh National Park with physicians from several other counties in Tennessee and Mississippi as guests. The speakers were Drs. John B. Nuckolls, Jackson, "Urinary Tract Infections"; Stanley A. Hill, Corinth, Miss., "Fractures of the Elbow"; Le Roy B. Brackstone, Iuka, Miss., "Amebiasis," and John L. McGehee, Memphis, "Cryptorchidism and the Torek Operation for Relief." ——Drs. Carl W. Brabson, Telford, and John L. Hankins, Johnson City, addressed the Washington County Medical Society July 7 on "Hypertrophy of the Prostate" and "Backache" respectively.

WEST VIRGINIA

Campaign to Encourage Birth Registration.—The West Virginia State Health Department with the cooperation of the U. S. Bureau of the Census will sponsor a "Birth Registration Week" during the week of October 2. A central committee representing the health department, the census bureau, the state medical association, the parent-teacher association, the state federation of women's clubs, the state agricultural extension division, the state public assistance department, the American Legion and the WPA has planned an intensive campaign for each county, designed to make every citizen aware of the importance of birth registration.

Enlarge Hospital for Crippled Children. — A new seventy-five bed wing of the Morris Memorial Hospital for crippled children near Milton was opened July 10. The unit cost $250,000, made available from WPA funds. In 1935 the state legislature appropriated $20,000 for improvements and in 1937 $64,000 to assist the hospital to take advantage of federal aid. When the project is completed there will be a main hospital building with two wings of seventy-five beds each, a central administration building with operating rooms, offices, nurses' and surgeons' quarters, a hydrotherapeutic unit, a school building and various farm buildings. In addition to one wing of the hospital, the hydrotherapeutic building, the dairy barn, a road to the main highway and several small farm buildings have been completed.

WYOMING

Plague Infection.—According to *Public Health Reports*, plague infection was demonstrated in a pool of eighteen fleas collected from eight prairie dogs (Cynomys leucurus) shot June 27 eight miles northwest of Evanston, Uinta County, and in animal tissue and in pools of fleas from Citellus armatus, all within from two to eight miles of Cokeville, Lincoln County.

CANAL ZONE

Society News.—The Medical Association of the Isthmian Canal Zone met at the Gorgas Memorial Laboratory, Panama, Republic of Panama, June 21, with the following speakers: Drs. Jesse C. Ellington, Ancon, on "Infant Mortality in Panama City"; Maximo Carrizo y Villarreal, Panama, "A Preliminary Report on the Roentgenologic Aspect of Childhood Tuberculosis in Panama City"; Agustin A. Sosa, Panama, "Pulmonary Tuberculosis in the Adult as Seen in Panama" and Amadeo Vicente-Mastellari, Panama, "Diphtheria Studies in Panama."

GENERAL

Journal of Social Ophthalmology.—The International Association for the Prevention of Blindness has begun publication of the *Journal of Social Ophthalmology*, a quarterly with articles in both French and English. Its purpose, according to an announcement from the National Society for the Prevention of Blindness, is to facilitate the exchange of information throughout the world in the organized campaign for the prevention of blindness and the conservation of vision. The international association's headquarters are at 66 Boulevard Michel, Paris.

Society News.—Dr. McIver Woody, New York, was named president of the American Association of Industrial Physicians and Surgeons at the recent annual meeting in Chicago. Dr. Clarence D. Selby, Detroit, became president and vice presidents elected were Drs. Daniel L. Lynch, Boston, and Lloyd Noland, Fairfield and Birmingham, Ala. Dr. Volney S. Cheney, Chicago, was reelected secretary.—— The annual meeting of the Polish Medical and Dental Association of America was held in Pittsburgh August 25-27. Among the speakers were Drs. Lester Hollander, Pittsburgh, on "Skin Disease from the Standpoint of the General Practitioner"; Ralph E. Tafel, Pittsburgh, "Human Sterility"; Francis L. Zaborowski, Philadelphia, "Important Factors in Speeding Up Postoperative Wound Healing," and Samuel Glenn Major, Pittsburgh, "Mouth and Face Surgery."——The National Recreation Association will hold its annual meeting in Pittsburgh October 3-7.

Changes in Status of Licensure. — The State Medical Board of the Arkansas Medical Society announces the following:

Dr. Luther W. Copeland, Trumann, license restored June 9.

The Massachusetts Board of Registration in Medicine announces the following:

Dr. Russell B. Street, Conway, license restored April 28.

The Minnesota State Board of Medical Examiners reports the following action:

Dr. George H. Espenlaub, Evansville, Ind., license revoked May 13 on his conviction for assault and battery.

The New York state board of medical examiners recently reported the following action:

Dr. Julius Warren Blakely, whose last known address was Highland, N. Y., license revoked April 14, on his conviction of a felony.

Dr. Herman B. Elster, whose last known address was 505 West End Avenue, New York, license suspended for nine months.

Patients at National Leprosarium Plead for New Location.—At a mass meeting August 17 the patients at the National Leprosarium, Carville, La., adopted a resolution requesting a change in location for the national leprosarium and asserting their belief that the present location is detrimental to their health and well being. Reviewing the history of the leprosarium, the resolution states that Carville was originally the site of the Louisiana State Leprosarium, established in 1894. This site was accepted as a last resort when favorable locations in other communities could not be secured, because of the objections of residents. Thus, it is stated, the unsuitability of the Carville location was recognized then and a five year lease of the place was made as a temporary measure. For eight years no improvements were made and in the meantime another site was purchased. Plans to move the leprosarium to the new location were frustrated when residents of the vicinity burned the buildings. The present site at Carville was purchased as a permanent location in 1905. The U. S. government purchased the Louisiana leprosarium in 1921. A national committee spent four years investigating other locations and recommended sites in several other states as preferable to Louisiana, but the objections in these states resulted in the purchase of the Louisiana site. Emphasizing the fact that malaria is prevalent in the tropics, the resolution points out that from May 1, 1935, to May 1, 1936, there were 155 cases of malaria among the patients at the leprosarium, 42 per cent of the entire patient body. A similar percentage

of the personnel was also affected. Of the 155 patients forty-two died before May 1, 1938; of the deaths it was said that malaria was a contributing cause or at least an accelerating factor. Other patients in this group, with their resistance weakened by malaria, have experienced marked retrogression of their clinical condition and cases that had been in a quiescent state for twelve years or more have been reactivated, it is alleged. According to the resolution, the present location is undesirable not only from a climatic standpoint but from a geographic one as well, the hospital being situated in the inner bend of the Mississippi River, which bounds it on three sides, and the peninsular area thus formed is a swampy lowland with elevation below that of the normal river stage, and the yearly flood waters are a constant menace to life and property. The resolution also points out that in forty-four years of the leprosarium's existence both as a state and as a national institution no member of the medical and nursing staff or of the 200 employees has been known to contract the disease as a result of contact with the patients or otherwise, and that no case of leprosy has developed in the adjoining community. Submitted on behalf of the Patients' Federation, representing the patient body of the institution, the resolution concludes with an appeal to the U. S. Public Health Service to exert its utmost efforts toward securing a suitable location for the construction of a national leprosarium; a site which, as far as possible, shall have a climate with none of the objectionable features mentioned and which shall promote rather than retard recovery as well as the return of the patients to society as no longer a menace to others. Congress recently appropriated $5,000,000 for the construction of new buildings at the leprosarium.

American Roentgen Ray Society. — The thirty-ninth annual meeting of the American Roentgen Ray Society will be held at Haddon Hall, Atlantic City, N. J., September 20-23. There will be a symposium on heart disease in which the following will participate: Drs. Fred J. Hodges, Ann Arbor, Mich.; George P. Robb and Israel Steinberg, New York; Eugene Freedman, Cleveland; Merrill C. Sosman and George Levene, Boston; Hugo Roesler, Philadelphia, and Marcy L. Sussman, New York. In a symposium on growth the speakers will be Drs. Stanley P. Reimann and Baldwin H. E. W. Lucke, Philadelphia; Phineas W. Whiting, Ph.D., Jacob R. Schramm, Ph.D., and Frederick S. Hammett, Ph.D., Philadelphia. Among the speakers will be the following:

Drs. Karl Kornblum and Lawrence C. Fisher, Philadelphia, Carcinoma as a Complication of Achalasia of the Esophagus.
Dr. Jacob Gershon-Cohen, Dr. Harry Shay and Samuel S. Fels, Philadelphia, The Relation of Meal Temperature to Gastric Motility and Secretion.
Drs. William Snow and Meyer Rosensohn, New York, Roentgen Visualization of the Soft Tissues in Pregnancy.
Drs. Whitmer B. Firor and Charles A. Waters, Baltimore, The Present Status of Roentgen Treatment of Sinus Infections.
Dr. Lawrence Reynolds, Henrietta S. Hayden, Ph.D., and Kenneth Corrigan, Ph.D., Detroit, Roentgen Ray Diffraction Studies of Human Nervous Tissue.
Dr. Carleton B. Peirce, Montreal, Tuberculous Tracheobronchitis.
Lauriston S. Taylor, A.B., and George Singer, A.B., Washington, D. C., The Use of Protection for X-Ray Voltages Up to 400 Kilovolts.
Dr. Sydney J. Hawley, Danville, Pa., A Method for Obtaining Greater Ratio of Deep to Surface Dosage.

This year the society introduces a series of educational courses of one hour each day. Dr. Joseph McFarland, Philadelphia, will deliver the Caldwell Lecture Tuesday evening September 20 on "Keeping in Step with Science." The annual banquet will be Thursday evening. The annual golf tournament will be held Monday September 19 at the Seaview Golf Club; this year for the first time the Willis F. Manges Memorial Cup will be awarded.

CANADA

Society News.—Dr. John H. L. Simpson, Springhill, was elected president of the Medical Society of Nova Scotia, now the Canadian Medical Association, Nova Scotia Division, at the annual meeting in Halifax in June. Vice presidents are Drs. Henry K. MacDonald, Halifax, and Alexander B. Campbell, Bear River, and the secretary is Dr. Harry G. Grant, Halifax. The next annual meeting will be at Digby.

Otolaryngologist Wins British Award.—Dr. William J. McNally, otolaryngologist to the Royal Victoria Hospital, Montreal, was recently awarded the Dalby Prize of the Royal Society of Medicine of England "for the best work in otology published or done during the previous five years." The prize, which is a check for 100 guineas, was established fifteen years ago by Lady Dalby as a memorial to Sir William Dalby. Previous recipients of the prize were Drs. Otto Mayer of Austria and Albert A. Gray of Scotland. Dr. McNally has been conducting research on the functioning of the internal ear.

FOREIGN

Society News.—Dr. Thomas Fraser, consulting physician of the Royal Infirmary, Aberdeen, Scotland, was chosen president of the British Medical Association for 1939-1940. Dr. Colin D. Lindsay, Plymouth, is the president for the current year.——At a meeting of the Osler Club of London July 12 on the eighty-ninth anniversary of the death of Sir William Osler, Dr. Thomas Archibald Malloch, New York, librarian of the New York Academy of Medicine, delivered the eleventh Oslerian Oration on the life and work of Osler. Dr. Harvey Cushing, Sterling professor of neurology, emeritus, Yale University School of Medicine, New Haven, also spoke.

Personal.—Charles R. Harington, Ph.D., professor of pathologic chemistry, and Dr. William W. C. Topley, professor of bacteriology and immunology, in the University of London, have been appointed members of the Medical Research Council to succeed Dr. Alfred J. Clark and Sir John C. G. Ledingham, who retire September 30.——William H. Tytler, research bacteriologist of the Welsh National Memorial Association, has been appointed to the David Davis Chair of Tuberculosis in the Welsh National School of Medicine of the University of Wales to succeed Prof. Stevenson Lyle Cummins, who has retired.——Dr. Carl G. Jung, professor of psychology at the University of Zurich, Switzerland, received the honorary degree of doctor of science from Oxford University, where he presided at the tenth International Congress of Medical Psychotherapy.

Cholera Vaccine for China.—The Chinese government has recently appealed to the League of Nations for six million doses of cholera vaccine to combat the epidemic in the central and southwestern regions. The *Lancet* reports that the following countries have responded: Australia and Ceylon 500,000 doses each, Philippine Islands (Red Cross) 1,000,000, Denmark 130,000, Rumania 1,000,000, Yugoslavia 500,000, Turkey 1,000,000 and Egypt 180,000. The Pasteur Institute at Hanoi had previously sent 250,000, according to this report; the National Institute of Bacteriology, Buenos Aires, has offered 200,000, and the American Red Cross was preparing to ship 3,000,000. The League's epidemic commission has established three units, which have undertaken smallpox vaccination on a large scale and measures against typhus, including inoculation, delousing, supervision of refugees and establishment of hospitals. Two tons of quinine has been sent to China for the campaign against malaria and efforts are in progress to reduce syphilis, rabies, plague and the diseases of malnutrition.

Deaths in Other Countries

Sir David P. D. Wilkie, professor of surgery, University of Edinburgh; surgeon to the Royal Infirmary, Edinburgh; member of the Medical Research Council; died in London August 29, aged 56.

Government Services

Examination for Army Medical Corps

The War Department announces an examination December 5-9, both dates inclusive, for the purpose of qualifying candidates for appointment as first lieutenants in the Medical Corps, Regular Army, to fill vacancies occurring during the fiscal year 1939. The examination is open to all male graduates of acceptable medical schools who have completed a year's internship in an approved hospital and who will be not more than 32 years old at the time it is possible to tender a commission. The examination will be conducted by boards of officers in various parts of the United States and will consist of a physical examination, a written examination in professional subjects and a determination of the candidate's adaptability for military service. Licentiates of the National Board of Medical Examiners may be exempted from the written professional examination. Information and application blanks may be obtained from the Adjutant General, War Department, Washington, D. C. Applications will not be considered after November 19.

CORRECTION

Percentage of Necropsies.—In the Educational Number of THE JOURNAL, August 27, the percentage of necropsies for the Research Hospital, Kansas City, Mo., was incorrectly listed as 19 instead of 69 per cent.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 20, 1938.

The Annual Meeting of the British Association

The annual meeting of the British Association for the Advancement of Science was held at Cambridge. As usual, some of the papers had a special interest for physicians.

VISION AIDED BY SCIENCE

The president, Lord Rayleigh, took natural vision and vision aided by science as the subject of his address. He said that the combination of qualities of the human eye which allowed rapid changes to be followed was ideal for nature's primary purpose, finding subsistence under primitive conditions and fighting the battle of life against natural enemies. The use of lenses was one of the greatest scientific advances, but we did not know who made it. Spectacle lenses were a medical invention dating from about A. D. 1280. Lenses led to the telescope and the microscope. In theory there was no limit to the telescope, but there was a definite limit to the microscope, depending on the structure of light. Something, but not very much, could be gained by the use of ultraviolet radiation instead of visible light, and it then became necessary to work by photography. But here we had not come to an end and had two alternatives. Paradoxic as it might seem, we could make out of empty space lenses for certain radiations, or we could make optical observations without any lenses at all. Cathode rays could be bent by electric or magnetic forces, and a system of "electron optics" had been elaborated. A beam of cathode rays issuing from a point could be reassembled into an image, and a magnified image of the sources of electrons could be formed on a fluorescent screen. After a reference to the "electron microscope," he said that obscure regions between the smallest organisms and the largest crystalline structure might be explored with the electron microscope. Color vision was one of nature's most wonderful achievements, which anatomy did not explain. The retinal cones were probably responsible for it, but no division into three kinds corresponding to the three color sensations had ever been observed. Nor did any known anatomic peculiarity distinguish a color-blind from a normal eye.

THE PERVERSION OF ANTHROPOLOGY

In the Section of Geography Griffith Taylor, professor of geography in the University of Toronto, said that today the social sciences were challenged by the forces of reaction, the perverted use of anthropology and sociology to advance the views of some of the totalitarian nations. Geographers might do yeoman service by the scientific teaching of what was becoming known as cultural geography. Referring to his twenty years of work on the migration tone theory of racial evolution, Professor Taylor said that all the progressive nations were built up of the same three stocks, Alpine, Nordic and Mediterranean. When this thesis was accepted much of the evil structure based on race prejudice must fall. Race prejudice was but another name for ethnologic ignorance. We were all agreed that the term Aryan could be applied only to speech, but few people realized that the term Jew could be used only in connection with religion. We needed a new term to express a group linked by purely cultural characters, such as language or religion. For instance, in Canada we did not have a French race, since Frenchmen might belong to any of the three distinct races. We had only a French cult linked closely by religion and to a less extent by language. So also we should learn to speak of a Jewish cult, since this large group was linked closely by religion and to a lesser degree by language. The Jews, like the Germans, were of two different races. If they came from Poland they belonged to the Alpine race; if from Spain, to the Mediterranean. The linguistic divisions in Europe were Aryan and Altaic, but the race divisions were Nordic, Alpine and Mediterranean. The German nation was half Nordic and half Alpine. The Jews in Europe belonged to a cult, and racially about three fourths were broad-headed Alpines, like the other mid-Europeans. The explanation was the widespread conversions to Judaism which took place in the past in eastern Europe. Racially the Jews were Alpines like the rest of the South Germans.

The Health of the Nation

A steady improvement in the national health is shown in the nineteenth annual report of the ministry of health, which has just been published. A comparison with 100 years ago reveals the magnitude of the advance. In 1838 the general death rate was 22.4 per thousand compared with 12 today. The death rate for tuberculosis was 4,480 per million, against 700 today. More than 1,000 persons per million died from smallpox and twenty-two from cholera, while there was not a single death from these diseases last year. The death rate for typhoid was 1,228 per million, against 5 today. The maternal mortality, which has been unsatisfactory and refractory, shows a substantial fall. The rate in 1937 was 3.1 per thousand births, against 3.6 in 1936 and 3.9 in 1935. The infant mortality was 58 per thousand births, compared with 59 in the previous year, but was slightly above the record figure of 57 in 1935. There are now 3,145 infant welfare centers in England, an increase of ninety-four over 1936. The crude death rate from tuberculosis per million in England and Wales was 695, against 692 in 1936 and 718 in 1935. There was a decrease in the reported cases of enteric fever (including paratyphoid) from 2,490 in 1936 to 2,149 in 1937. A feature of the report is the presentation of the statistics for Wales in a separate table. They show the great fall in the birth rate which has gone on in Great Britain for many years. In 1901, when the population of Wales was just over 2,000,000, there were 62,233 births; in 1937 the population was nearly 2,500,000 but there were only 37,175 births, a fall of over 50 per cent. During the same period the death rate fell from 18.1 to 10.5 per thousand but the infant mortality fell from 161 to 63 per thousand live births, which to some extent counteracted the effect of the fall of the birth rate. Another gratifying feature was a fall in the maternal mortality from 6.61 per thousand births in 1904 to 4.54 in 1937, the lowest yet attained.

The Agreement Between the Various Schools of Psychotherapy

At the tenth International Congress for Psychotherapy, which was held at Oxford, Prof. C. J. Jung, the president, gave an address in which he explained fourteen points on which agreement had been reached between the conflicting schools by the Swiss branch of the congress. Because of want of agreement it had proved impossible to include psychotherapy in an academic curriculum, but there was more common ground than was generally realized. The points of agreement were as follows: The first objective was diagnosis, which depended on the anamnesis—the relation of the patient to his difficulties and the symptoms. The results showed that there were forms of illness which had nothing to do with bodily disturbances but were intelligible only in terms of the mind. The method of diagnosis was therefore focused not on the seat of illness but on the general psychic disposition. It considered all possible means of expression: premeditated speech, free association, fantasies, dreams, symptoms and demeanor. It found an etiology reaching down into the depths of the personality and so transcending the limits of the conscious mind. The dark por-

tion of the psyche was called the unconscious. This investigation led to the discovery of unconscious fixation on crucial situations and persons significant in the patient's childhood. These fixations had both a causal and a purposive aspect and set tasks for future fulfilment. One of the tasks of psychotherapy was to illuminate the factors out of which the illness developed, and its method was the analysis and interpretation of all forms of expression. The therapeutic development of the patient depended on the relation between him and the physician, and this formed the basis of his relation to society. In treatment this relation took the specific form of transference, which was the projection of unconscious contents and appeared as a transference neurosis. The reduction of the transference neurosis showed it to have been laid down in the unconscious fixations of childhood. Behind these individual fixations, collective unconscious factors were assumed. The new contents had to be realized as parts of the personality, because only in this way could the patient feel his responsibility toward them.

At the close of the congress Professor Jung answered a number of questions. Psychology, he said, was such a large and difficult subject that the psychotherapist could not rest on his own training alone but must borrow from philosophy, anthropology, history and literature. Primitive psychology solved many difficulties. Primitive peoples had few traces of what we call "volition." For doing anything unusual they had to work themselves up ceremonially. At about the age of 36 the personality expanded into life, like an exploding celestial body. After 40 depression was frequent among those who had not fulfilled their ambitions. The great religions were preparation for the second half of life. Religious experience was a worldwide and universal phenomenon. One who did not know what it is was not normal. He did not recognize his own religious experience, and some other parts of life were exaggerated by the energy which should have gone into that experience. It was an insanity of the white man that he had lost the religious order of life.

PARIS

(From Our Regular Correspondent)

Aug. 11, 1938.

The Relation of Pulmonary Tuberculosis to Poor Housing

A book entitled "Tuberculosis and Social Medicine," by Dr. Etienne Bernard, has just been published. In the chapter on proper housing conditions in relation to tuberculosis, the author states that wherever attention has been given to sanitary living conditions as a governmental policy the death rate for tuberculosis has greatly decreased. This is especially true of Great Britain, but thus far little has been done in this direction in France. A study made in 1919 of all houses in which at least ten deaths from tuberculosis had taken place from 1894 to the end of 1918 revealed a total of 4,750 such houses, located chiefly in two densely populated wards of Paris. It was found that 186,000 persons lived under most inadequate and unhealthful conditions. It was then decided to demolish such houses and construct 20,000 others, to which the tenants would be moved. This plan has been carried out so far as the buildings themselves are concerned, but not more than 3 per cent, or 5,500, of the persons who were lodged in hovels and similar insanitary homes were able to move to the new buildings; the others could not afford to pay the rent asked by the city of Paris. In order to meet this objection, the city council has recently voted to construct 5,000 new houses or flats, to be rented at a low price, but it has been found that on account of the present high cost of construction it is difficult if not impossible to solve the problem in this manner. An effort has been made to build some "garden cities" in the suburbs of Paris to take care of 32,000 persons, and about 200,000 houses have been constructed in other parts of France. Here again the government is confronted with the inability of those who live in shambles to pay the rents demanded for more sanitary homes. Since 1922 nearly three million houses have been constructed in England, at a cost which is nearly ten times that allotted in France for similar work. In Germany and Italy huge sums are also being spent for better housing conditions. Dr. Bernard in closing his chapter emphasizes the desirability of impressing the French government with the necessity of more liberal appropriations for this work.

Neurologic Complications of Therapeutic Pneumothorax

Reference was made in a previous letter to a paper by Dr. Weissmann-Netter in which he reported three cases in which transitory symptoms referable to the central nervous system had followed insufflation of air in the treatment of pulmonary tuberculosis. The discussion of the subject was continued at the June 10 and June 17 meetings of the Société médicale des hôpitaux. The first paper was by Drs. Etienne Bernard and Boris Kreis, who were of the same opinion as Dr. Weissmann-Netter, that these complications are rare. The patient, a woman aged 33, had pulmonary tuberculosis of eight years' duration. She was seen by the authors for the first time in March 1938. No sequels were observed after three insufflations, but as soon as 75 cc. of air had entered the pleural cavity the pressure was suddenly raised in the insufflation apparatus. This was immediately followed by a few spasmodic movements of the right side of the face and the right arm, as well as by hemiplegia on the left side, which were believed to be due to an air embolism. Ability to move the left arm returned in less than a half hour, and only a slight muscular weakness on the left side could be found a few hours later. The chief object of the paper was to call attention to the fact that neurologic complications occur when the insufflation is made in spite of the fact that manometric oscillations are slight or have ceased and the needle on being withdrawn contains blood. These signs show that the lung has been punctured. Air embolism is found also when extensive pleural adhesions exist, so that the air enters only a small pocket and when the pressure exerted in the effort to introduce more air causes the latter to enter some vessel during the breaking down of adhesions. Air embolism can easily occur under either of these avoidable conditions. In the discussion Dr. Sèze added two cases of hemiplegia; the condition followed simple exploratory puncture in one and a therapeutic pneumothorax in the other. In both the lung had been punctured. He advised the use of as small a caliber needle as possible.

Interesting Decision on Medical Responsibility

Since time immemorial it has been the custom for physicians to give their services gratuitously to colleagues and dependent members of their families. The question as to whether the same legal responsibility exists in such cases as when the physician is remunerated for his services is seldom raised. A recent decision rendered by the supreme court here on an appeal from a lower court is of considerable interest. After a series of radiation treatments for which no charge had been made by a radiotherapist, the patient, a physician, had as a sequel severe radiodermatitis. Suit was brought by the physician against the radiotherapist in the circuit court of Besançon in eastern France. The decision in this lower court was to the effect that, although it recognized the duty of every physician to give medical care without compensation to a colleague or to the dependent members of his family, nevertheless the attending physician retains the same responsibility toward the patient as though he had been remunerated for his services.

The supreme court, in reviewing the case on an appeal from this decision of the lower court, reiterated the responsibility, from a legal point of view, of a physician in treating a colleague gratuitously and confirmed the decision of the lower court awarding damages to the physician-patient.

Celebration of Fiftieth Anniversary of Institut Pasteur

The opening session of the first international congress of French-speaking microbiologists, to be held October 26-29, will be devoted to a celebration of the fiftieth anniversary of the Institut Pasteur of Paris. Addresses will be made by Mr. Lebrun, president of the French republic, and Mr. Rucart, minister of public health. The following morning a number of papers will be presented on microbiologic subjects. The October 29 session will be devoted to a discussion of the ultravirus. Information regarding the congress can be obtained by writing to the Association des microbiologists de langue française, Institut Pasteur, 28 rue du Docteur Roux, Paris 15.

BERLIN

(From Our Regular Correspondent)

July 21, 1938.

The Campaign Against Psittacosis

Psittacosis has become a domestic disease in Germany. Although the morbidity is still slight in comparison with other infectious diseases, Professor Haagen of the Infectious Diseases Institute, Berlin, emphasizes that all possible preventive measures are necessary to check the increasing frequency of epidemics. The danger of psittacosis should not be underestimated, as the morbidity among domestically bred stocks of psittaceous birds has increased steadily in recent years. The disease has been transmitted to man almost exclusively by the zebra-parrakeet. Among nonpsittaceous birds the canary bears particular watching, since it appears to be extremely susceptible to the virus of psittacosis. In Austria a few years ago canaries were responsible for numerous cases in man. Since the ban on the importation of parrots, which was imposed in 1930, foreign birds have no longer been a conspicuous source of infection.

In the years 1932 and 1933 a recession in human cases of psittacosis was noted, but in 1934 a further increase began. At the same time the presence of the infection in latent form was determined in large numbers of domestically bred parrakeets. A comprehensive antipsittacosis campaign was then initiated. The government declared psittacosis to be a menace to public health and decreed that all deaths, sickness and suspicion of sickness from this disease must be reported. The new law further provides for police supervision of the commercial breeding of parrots and parrakeets. The appearance of sickness in several birds in a store or breeding establishment must be reported to the authorities. If psittacosis is subsequently found, the police may order the destruction of the entire suspected stock. The veterinary board of control is also empowered to confiscate and sequester any suspected stocks. The further sale of the birds can be prohibited, in which event the breeders and dealers are suitably compensated. If psittacosis is established, an attempt is made to trace the infection to its origin by a study of the history of the particular stock for five preceding months at least.

The older legislative measures applied only to commercial dealers and breeders. Experience has meanwhile taught that healthy birds often become infected in small, noncommercial breeding establishments. Accordingly on April 1, 1938, a new law became effective which places all aviculture of this sort under official supervision. All birds of the parrot kind must now be secured with foot-rings. The new legislation envisages control of an important source of infection, the noncommercial breeding establishments; this is all the more necessary as the private maintenance of parrakeets has assumed extraordinary proportions in Germany. If within a reasonable period psittacosis, which is an avoidable infectious disease, has not been abolished in Germany, a general ban on all psittaceous birds is officially contemplated. Such a ban would mean the disappearance of every source of infection.

The Care of Premature Infants

Before the Berlin Pediatric Society, Dr. Körnig reported that at the Municipal Children's Hospital, Charlottenburg, excellent results in the care of premature infants have been obtained by careful observation, proper regulation of heating, sufficient isolation and a judicious dietary of relatively small quantities of breast milk. Of great importance for the prophylaxis of infection is the housing of the babies in single or double cubicles. Feeding is exclusively by means of the pipet or the bottle. The time from birth until the attainment of normal body weight is regarded as the period of standardization. During this period the precise amount of nutrition is scarcely considered except in connection with ability to ingest and the general condition. Artificial administration of hormones is deemed unphysiologic. Vitamin C is administered at an extremely early date; great emphasis is placed on the timely treatment of rickets. As to anemia, only the severe forms are treated with iron and intramuscular injections of blood. In the years from 1935 to 1938 the mortality among 143 premature infants amounted to 23.43 per cent; minus the number of babies dying within twenty-four hours after admission, 15.6 per cent.

According to Dr. Doxiades, the mortality among premature infants at Kaiserin Auguste Victoria-House was formerly more than 50 per cent. Even now among an annual accession of 200 premature infants the rate is still in the neighborhood of 50 per cent. Recent studies have revealed that from 3 to 6 per cent of all premature infants show themselves debilitated later in life. Other hospitals report similar figures.

Professor Opitz reports a mortality of some 50 per cent among premature infants of his clinic. Many of these babies succumb to pneumonia between the sixth and the eighth week, perhaps because this institution is without individual cubicles.

Of interest are the observations of Professor Bessau, the Berlin ordinarius of pediatrics. At the Children's Hospital of Berlin University a majority of premature infants die within the first twenty-four hours. Extremely careful necropsies have disclosed that fatal pneumonia among premature infants is usually an aspiration pneumonia. The incidence of this disorder can be reduced only by the strictest attention to feeding methods. The use of tiny feeding bottles is recommended. In Professor Bessau's opinion a risk inheres in any deviation from a breast milk regimen, namely any supplementary feeding. Sterilized breast milk is inferior to raw milk, even if the heating has been done with great care.

A New Form of Encephalitis in Germany

Since the epidemics of lethargic encephalitis which took place toward the end of the World War, the public has been disturbed time and again by outbreaks of certain acute inflammatory disorders of the central nervous system. Professor Pette, director of the Hamburg University Neurologic Clinic, has recently published a report on a new type of encephalitic disorder in which the anatomic lesions differ from those observed in any form of encephalitis hitherto observed in Germany. The disorder is characterized by remarkable anatomic changes and a unique clinical syndrome. Three cases, all fatal, were reported. The new form seems nearly identical with encephalitis japonica as well as with the epidemic which erupted in some American cities (St. Louis, Toledo, Kansas City) during 1933. Encephalitis japonica was first thoroughly described by the Japanese authors Kaneko and Aoki in 1928.

AUSTRALIA

(From Our Regular Correspondent)

Aug. 2, 1938.

New Zealand Practitioners Oppose Health Insurance

In New Zealand, as in Australia, medical practice is at the crossroads. The government is on the point of turning toward socialized medicine by way of compulsory national health insurance for every member of the community. Excellent as this may be for a country with a completely socialized economy, the scope of activity along these lines is strictly limited by financial considerations in any essentially capitalist economy. The New Zealand scheme, despite its enormous cost, provides only a universal general practitioner service.

The great majority of members of the profession are opposed to this scheme on scientific as well as on economic grounds. All are agreed that the promotion of health is a greater object than the treatment of sickness. Without wishing to underestimate the importance of curative medicine, it is felt that national health insurance, which is really a system of indemnification for sickness, does not (in the proposals put forward by the government) materially advance the greater object of the promotion of health. There are conditions in relation to environment, to conditions at work, to domestic help, to nutrition of the young, to preventive medicine and to research which are known to be unsatisfactory. It is felt that attention to these conditions would do far more for the people than the introduction of a costly system of health insurance. Further, the provision of a universal general practitioner service will do nothing toward remedying these deficiencies.

Again, the difficulty of workers in New Zealand is not so much the obtaining of ordinary medical attention in their homes and at consulting rooms as the provision for major illness, home nursing, hospitalization, specialist treatment and laboratory and radiologic investigation. These are the obstacles to complete medical service which the British Medical Association in New Zealand has sought to remove by means suggested in a plan previously submitted to the government, which implied the fixing of an income limit for beneficiaries.

Accurate diagnosis should be the most important function of the general practitioner, who first comes in contact with the patient. Diagnosis is the foundation of medical treatment, and all special diagnostic services should be available for his assistance; otherwise the general practitioner will become divorced from the most essential part of his professional duty. Unfortunately, the average patient is not conscious of the necessity for treatment to be based on accurate diagnosis, as witness the millions spent on "patent medicines." All he asks for is treatment, and under a panel system without auxiliary services treatment is certain to become empirical.

The introduction of a universal scheme abruptly changes the whole character of medical service, and the full consequence of so revolutionary an innovation cannot be foreseen. It involves changes in well rooted habits of the people and methods of the profession as well as the establishment of completely new economic relationship between the profession and the public. Practitioners in New Zealand see in the projected scheme a mistaken approach to the problem of raising the standard of health of the community. Furthermore, it appears to possess no appreciable advantage in the treatment of disease over what obtains at present.

Malnutrition in New Zealand

There is in New Zealand a system of infant feeding which has gained exceptionally wide acceptance. It is more than twenty-five years since the late Sir Truby King introduced this method and it should now be possible to estimate its results in adult life, for by such results the Plunket system must ultimately stand or fall. In view of the League of Nations statement that defects due to improper feeding in early life are often irreparable, even if followed by a period of proper feeding, the adequacy or otherwise of a system so universally applied becomes exceedingly important.

Dr. E. M. Spencer of Wellington, New Zealand, considers that the Plunket system is responsible for a considerable amount of underfeeding during infancy and thereby paves the way for a state of malnutrition in later years. He points out that, although the system has been in operation for a quarter of a century, the stature and physique of young adults in New Zealand compare unfavorably with those of a generation ago, that the incidence of dental caries in children and adolescents leads the world, and that the annual school statistics are monotonous in the regularity of the figure for malnutrition. During periods of prosperity and depression alike it has remained almost constant at 7 per cent. He has shown that malnutrition exists to an alarming and unsuspected extent in families in which it should least be expected, in homes where money is no object when it comes to providing good food in plenty, sunshine, fresh air and general care. In almost all such cases the children had been under the constant attention of a Plunket nurse. He contends that the most common fault in artificial feeding is the use of too dilute mixtures and that complete digestibility cannot make up for lack of caloric requirements. The use of formulas which are too low in their content of milk solids implies too low a protein intake. Further, he maintains that the weight curves to which New Zealand babies are expected to conform are too low and are in fact lower than those used in New York and London. Moreover, the Plunket system of feeding does not make sufficient allowance for the extra nutritional needs of babies destined to be above the average stature. Lack of adequate food brings poor physical condition and, along with this, lack of appetite. It is doubtful, therefore, whether a child ever makes up the leeway due to insufficient feeding during the first year, and at twelve months he is already a candidate for the group "malnutrition" when he reaches primary school.

Whether it is justifiable to infer that, hand in hand with a remarkable lowering of infantile mortality, the Plunket system is partly responsible for a state of malnutrition among children and young adults is a debatable question. Nevertheless, Dr. Spencer's observations remind us that the problem is not merely to save life during the perilous first year but to adopt those means which shall secure healthy growth and optimal development.

Poliomyelitis in Australia

Since the outbreak of an epidemic of poliomyelitis in Victoria early in June 1937, a total of 2,081 cases has been reported with 106 deaths. This represents an occurrence of eleven cases to 10,000 of population, with a mortality rate of 5.1 per cent. In other states the epidemic has been less severe but with a higher rate of mortality. During the last three months the incidence has fallen almost to nonepidemic prevalence.

In view of the rather unusual character of the epidemic, particularly in the early stages, an isolation of the virus was made in order to establish that the infections were due to the usual type of virus. Burnet and Keogh, working at the Walter and Eliza Hall Institute, Melbourne, have reported that intracerebral inoculation of monkeys with material obtained from the spinal cords of several patients who died produced typical symptoms, with some variability in the incubation period. The virus is more readily transferred to the monkey than strains obtained in nonepidemic periods.

Monkeys that recovered after infection with the recently isolated strain are still partially susceptible to infection with the Rockefeller Institute MV strain, so that, although the virus responsible for the epidemic has significant antigenic resemblance to it, it is not identical with the classic MV strain of poliomyelitis virus.

ITALY

(From Our Regular Correspondent)

July 30, 1938.

Surgical Intervention in Appendicitis

Professor Santi recently reported before the Accademia medica "Filippo Pacini" of Pistoia thirty-four cases of acute appendicitis with circumscribed peritonitis on the first or fourth day of the disease. All of the patients recovered after medical treatment. Among fourteen patients who had acute appendicitis with diffuse peritonitis in which medical treatment was administered, five recovered. Among twelve patients suffering from a circumscribed abscess, the latter was spontaneously evacuated and reabsorbed in ten cases. In the early stage of acute appendicitis a prognosis as to the evolution of the disease cannot be made. There are no symptoms by which a plastic type of appendicitis can be differentiated from a perforating appendicitis. It is advisable to follow the old formula of operating whenever possible in the first hours of acute appendicitis. The mortality in these conditions is nil or slight.

Etiology of Gastric Ulcer

Prof. Guido Manni, in a recent lecture before the army physicians in Trieste, discussed gastric and duodenal ulcers. The fact that, among large groups of persons living in the same climate and under the same standards of life, ulcer develops in only a few shows the lack of influence of external factors and the role of some individual factor. The importance of individual predisposition is shown by the frequency of the disease in persons of a lymphatic-chlorotic and anemic constitution. The psychic factor is important. Stefano found emotional conflicts present in thirty cases of gastric or duodenal ulcers which he observed. According to the speaker, the existence of familial gastric disease is of less importance than heredity of vagosympathetic disturbances, which are the predisposing factors for the development of gastric or duodenal ulcers in 25 per cent of the cases. The speaker found syphilis in 3 per cent of his cases. The vascular theory can be partially accepted only in association with the neurogenic one. It is believed that the gastric wall is attacked by the gastric juice only when the circulation of a particular area is disturbed. Generally ulcers occur in areas of the gastric mucosa which are in close contact with the gastric secretion, such as the small curvature and the pylorus. Ulcer frequently develops in patients suffering from hyperchlorhydria and increased peptic power of the gastric secretion, whereas it is rare in persons with normal gastric secretion, and exceptionally rare in hypopepsia. Hyperchlorhydria, although not indispensable for the development of ulcer, exists in 73 per cent of the cases. Disorders of the metabolism of cholesterol have been shown in gastric ulcer. Iarno found hypocholesterolemia in all cases of gastric ulcer. There is also an anaphylactic theory which is supported in Italy by Cesaris-Demel and in the United States by Shapiro and Ivy, who regard the ulcer as an Arthus phenomenon. The insufficiency of vitamins is also a theory. The speaker concluded that the development of gastric ulcer cannot be explained by any of the known theories.

Society Reunion

The Società piemontese of surgery recently met at Turin with Professor Uffreduzzi presiding. Professor Bobbio spoke on sacrococcygeal cordoma. His patient, aged 54, had an operation in 1929 for the removal of a tumor of the sacrococcygeal cavity. Microscopic study of the tumor showed a typical cordoma which recurred in 1933 in a gluteus and in 1938 in the scar on the buttock. The speaker said that sacrococcygeal cordoma is malignant and of a reserved prognosis. The tumor has a tendency to recur in the same place in which it appears at first, and also to produce metastases. The tumor is not sensitive to roentgen irradiations.

Professors Filocchi and Buisson spoke on late results of cholecystostomy. The operation enables the surgeon, by means of introduction of opaque substances, to ascertain whether or not the draining system of the biliary tract is opened. Cholecystostomy was done, from 1932 to 1936, at the surgical clinic of Turin in thirty-six cases. The five patients in the group who had hepatitis died. Of the remaining thirty-one, five died some time after the operation from an intercurrent disease. Thirteen had no more complaints. Recurrence took place in ten patients, six of whom had a second operation.

Articular Fractures in War

A combined session of the Accademia Medica and the Accademia Lancisiana was held at Rome. The participants were prominent surgeons of the capital who are also veterans of various military campaigns. Surgeon General Professor Caccia called attention to the need for better organized treatment of articular fractures incurred in war. The author stressed the numerical importance of injuries of this type. They represent about 25 per cent of all curable war wounds. He then discussed the possibility of cure and proposed that in future the medical corps should be better prepared to treat such injuries both through improved special technicosurgical equipment and a better training of surgeons. At the conclusion of Professor Caccia's address the academies voted the following recommendations: 1. The military authorities should see to it that all military hospital units specializing in the treatment of articular fractures are provided with the most modern equipment and that the surgeons in charge are specially trained in traumatology. 2. All patients with articular fractures, after emergency treatment at the aid stations, should be quickly evacuated to the special hospitals. 3. Sixth year medical students should be required to pass a final examination in a theoretical and practical course in emergency treatment of war wounds, to be given at the premilitary school.

The Therapy of Pneumonia

In the general assembly of the Italian sections on general medicine, which met at Milan to discuss the therapy of pneumonia, it was formally recommended that all health authorities should take an active part in the improvement of present conditions by advocating measures which would facilitate the early diagnosis of pneumonia and hastening the use of specific serotherapy. The national health authorities should find means to assure an ample supply of the required serums.

Marriages

HENRY MURFREE CARNEY, Murray, Ky., to Miss Enid Lee Lindenberg of Nashville, Tenn., at Harbor Springs, Mich., recently.

LEWIS ELLSWORTH HEDGECOCK, Hampton, Iowa, to Miss Pauline Davis of Estherville, July 12, in Nowata, Okla.

WILLIAM NORTH DAWSON, Murfreesboro, Tenn., to Miss Mary Frances Monroe of Russellville, Ky., in June.

ROBERT SAMUEL MOSLEY, Miami, Fla., to Miss Elizabeth Stucky of Pahokee, July 10, at Asheville, N. C.

MALCOLM SHIELDS DICKSON, Oakboro, N. C., to Miss Frances Elizabeth Boyette of Ahoskie, July 23.

GEORGE GARDNER DURST, Cincinnati, to Miss Mary Elizabeth Watts of Columbia, S. C., in June.

EVERETT MANSHIP HARRISON, Dunedin, Fla., to Miss Mamie Lou Sharpe in Clearwater, August 8.

HAROLD WRIGHT MUECKE, Macon, Ga., to Miss Marian Hawk of Rimersburg, Pa., June 11.

CLYDE WILSON COLLINGS, New York, to Miss Mary Ann Foley of Portland, Maine, July 21.

ROBERT CLEMENTS to Miss Eunice Tanner, both of Danville, Ill., in Champaign, August 4.

MAURICE JOSEPH COSTELLO to Miss Margaret Therese Moore, both of New York, July 30.

Deaths

John Levy, New York; McGill University Faculty of Medicine, Montreal, Que., Canada, 1926; member of the American Psychiatric Association and the American Orthopsychiatric Association; associate clinical professor of psychiatry at the Columbia University College of Physicians and Surgeons; psychologist to the Canadian National Hygiene Clinic, 1922-1923; clinical assistant to the psychiatric clinic, Royal Victoria Hospital, Montreal, 1925-1926; assistant physician to the Manhattan State Hospital, New York, and clinical assistant, mental hygiene clinic, Bellevue Hospital, 1926-1927; psychiatrist, Institute of Juvenile Research, Chicago, Judge Baker Foundation, Boston, and child guidance clinic, Cleveland, 1927-1928; chief, child guidance clinic, department of psychiatry, Columbia University since 1930; aged 41; died, July 11, in the Beth Israel Hospital, Boston, of chronic interstitial nephritis.

Felix Percy Chillingworth, Boston; Yale University School of Medicine, New Haven, 1907; assistant professor of physiology at the University of Kansas School of Medicine, Lawrence, 1912-1914; assistant professor of physiology and pharmacology at Tulane University of Louisiana School of Medicine, New Orleans, 1913-1920; professor of pharmacology at the Tufts College Medical School; fellow of the American College of Physicians and the American Association of Anatomists; physiologist to the Forsyth Dental Infirmary; aged 55; died, June 30.

Charles Fremont Dight, Minneapolis; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1879; formerly health officer of Holton, Mich.; at one time assistant to the professor of pathology and the practice of medicine and clinical medicine and secretary of the faculty, University of Michigan Medical School, Ann Arbor, and instructor in pharmacology and lecturer in pharmacology and materia medica, University of Minnesota Medical School; aged 81; died, June 20, in the Franklin Hospital of coronary disease and arteriosclerosis.

Joseph Aloysius Lanahan ⊕ New York; Albany (N. Y.) Medical College, 1899; at one time instructor in dermatology at his alma mater; served during the World War; superintendent of the New York City Hospital, Welfare Island; formerly superintendent of the Lincoln Hospital, Morrisania City Hospital and the psychiatric division, Bellevue Hospital, New York, and the Kings County Hospital, Brooklyn; aged 65; died, June 2, of coronary thrombosis.

Claude Edward Cooper ⊕ Denver; Gross Medical College, Denver, 1900; professor of otolaryngology at the University of Colorado School of Medicine; member of the American Academy of Ophthalmology and Oto-Laryngology and the American Laryngological, Rhinological and Otological Society; veteran of the Spanish-American War; aged 59; on the staff of the Mercy Hospital, where he died, June 21, of pulmonary tuberculosis.

Claude Marion Bloss ⊕ Okemah, Okla.; University of Texas School of Medicine, Galveston, 1908; secretary-treasurer and past president of the Okfuskee County Medical Society; county superintendent of health; formerly member of the school board; served during the World War; on the staff of the Clinic Hospital; aged 60; died, June 14, in the Okmulgee (Okla.) Hospital following an operation for intestinal obstruction.

Charles C. Stephenson, Los Angeles; Kentucky School of Medicine, Louisville, 1889; veteran of the Spanish-American War; at one time professor of ophthalmology, College of Physicians and Surgeons, Little Rock, Ark.; past president of the Arkansas Medical Society; formerly on the staff of the Arkansas State School for the Blind, Little Rock; aged 74; died, June 12, of lobar pneumonia and chronic myocarditis.

George Lally Curran ⊕ North Adams, Mass.; University and Bellevue Hospital Medical College, New York, 1911; fellow of the American College of Surgeons; served during the World War; surgeon to the North Adams Hospital; member of the associate staff of St. Luke's Hospital, Pittsfield, and consulting surgeon to the W. B. Plunkett Memorial Hospital, Adams; aged 50; died, June 30, of cerebral hemorrhage.

Charles Dudley Eldred ⊕ Joliet, Ill.; Northwestern University Medical School, Chicago, 1914; fellow of the American College of Surgeons; served during the World War; past president of the Will-Grundy County Medical Society; surgeon to St. Joseph's and Silver Cross hospitals; aged 51; died, June 25, in St. Luke's Hospital, Chicago, of cholelithiasis, common duct stone and acute pancreatitis.

John Horn, New York; University of the City of New York Medical Department, 1885; member of the Medical Society of the State of New York and the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; formerly on the staff of the Lenox Hill Hospital; aged 82; died, June 12, of arteriosclerosis.

Carl Philip Schoen ⊕ New Albany, Ind.; University of Louisville (Ky.) School of Medicine, 1926; fellow of the American College of Surgeons; clinical associate in gynecology at his alma mater; on the staff of St. Edward's Hospital; aged 36; died, June 9, in the New England Deaconess Hospital, Boston, following an operation for tumor of the brain.

William Martin Hill, Noank, Conn.; University of Virginia Department of Medicine, Charlottesville, 1897; member of the Connecticut State Medical Society; past president of the New London County Medical Society; on the staff of the Home Memorial Hospital, New London; aged 69; died, June 8, of coronary thrombosis.

Beverley Tucker ⊕ Colorado Springs, Colo.; University of Virginia Department of Medicine, Charlottesville, 1889; fellow of the American College of Surgeons; attending obstetrician to the Glockner Hospital; member of the staff of the Beth-El General Hospital; aged 71; died, June 2, of coronary thrombosis.

Floyd Nicholson Shipp, Goodrich, Texas; Central College of Physicians and Surgeons, Indianapolis, 1903; member of the State Medical Association of Texas; served during the World War; at one time a member of the U. S. Public Health Service; aged 59; was killed, June 15, in an automobile accident.

Ross Chauncey Whitman, Boulder, Colo.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899; formerly secretary and professor of pathology at the University of Colorado School of Medicine, Denver; aged 65; died, June 5, in the Community Hospital of coronary thrombosis.

James Andrew Bline ⊕ Yakima, Wash.; Chicago College of Medicine and Surgery, 1910; member of the Pacific Coast Oto-Ophthalmological Society; on the staffs of St. Elizabeth's Hospital and the Yakima County Hospital; aged 60; died, June 21, of pneumococcic septicemia.

William Percival Ross, Battle Lake, Minn.; University of Manitoba Faculty of Medicine, Winnipeg, 1923; member of the Minnesota State Medical Association; medical superintendent of the Otter Tail County Sanatorium; aged 45; died, June 25, of coronary thrombosis.

Warren Coleman ⊕ Troy, Ohio; Medical College of Ohio, Cincinnati, 1888; fellow of the American College of Surgeons; chairman of the county board of health; on the staff of the Stouder Memorial Hospital for many years; aged 72; died, June 11, of chronic myocarditis.

Frank Edwin Tasker, West Acton, Mass.; Dartmouth Medical School, Hanover, N. H., 1893; member of the Massachusetts Medical Society; for many years a member of the board of health; aged 74; died, June 19, of arteriosclerosis and chronic endocarditis.

Winborne Dewey Evans ⊕ Camden, N. J.; Jefferson Medical College of Philadelphia, 1925; on the staff of the Cooper Hospital; aged 38; died, June 26, in the Zurbrugg Memorial Hospital, Riverside, of a skull fracture received in an automobile accident.

Charles J. Ennis, Sault Ste. Marie, Mich.; Schools of Surgery, Royal College of Surgeons in Ireland, Dublin, 1874; member of the Michigan State Medical Society; past president of the Upper Peninsula Medical Society; aged 88; died, June 11, of myocarditis.

James Walter Allen, Rutherford, Tenn.; University of Nashville (Tenn.) Medical Department, 1900; member of the Tennessee State Medical Association; bank president; aged 64; died, June 2, in the Baptist Hospital, Memphis, of coronary occlusion.

Albert Claire Gray, Keokuk, Iowa; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1908; member of the Iowa State Medical Society; on the staffs of the Graham and St. Joseph's hospitals; aged 55; died, June 15, of angina pectoris.

Rollin Schwartz, Chippewa Falls, Wis.; Hahnemann Medical College and Hospital, Chicago, 1904; member of the State

Medical Society of Wisconsin; on the staff of the Chippewa County Chronic Insane Asylum; aged 58; died, June 16, of arteriosclerosis.

George P. Pennington, Atlantic City, N. J.; Jefferson Medical College of Philadelphia, 1909; for many years on the staff of the Atlantic City Hospital; aged 53; died, June 29, of cerebral hemorrhage, arteriosclerosis, heart disease and hypertension.

Daniel S. Rice ⊕ Ebensburg, Pa.; Cincinnati College of Medicine and Surgery, 1884; fellow of the American College of Surgeons; was a member of the local examining board during the World War; aged 78; died, June 18, of myocarditis and endocarditis.

Austin Keeler Van Dusen ⊕ Chicago; Northwestern University Medical School, Chicago, 1923; clinical assistant in pediatrics at his alma mater, 1930-1933; on the staff of the Illinois Masonic Hospital; aged 39; died, June 22, of coronary occlusion.

George Lawrence Stevenson, Sacramento, Calif.; University of California Medical Department, San Francisco, 1899; member of the California Medical Association; aged 67; died, June 24, of carcinoma of the lip with metastasis to the lungs and liver.

Nathaniel J. Pickett, Milford, Texas; University of Tennessee Medical Department, Nashville, 1892; member of the State Medical Association of Texas; past president of the Ellis County Medical Society; aged 70; died, June 20, of uremia.

Silas Sanford, Palmyra, Mo.; Bellevue Hospital Medical College, New York, 1886; member of the Missouri State Medical Association; past president of the school board; aged 78; died, June 25, in Rochester, Minn., of carcinoma of the stomach.

Chester Earl Myers, North Freedom, Wis.; University of Nashville (Tenn.) Medical Department, 1911; member of the State Medical Society of Wisconsin; aged 55; died, June 29, of pneumonia, coronary disease, hypertension and nephritis.

Foy Clawson Payne ⊕ Dayton, Ohio; University of Cincinnati College of Medicine, 1917; member of the American Society of Clinical Pathologists; on the staffs of St. Elizabeth and Good Samaritan hospitals; aged 43; died, June 15.

Annetta Ayers Saunders ⊕ Chicago; National Homeopathic Medical College, Chicago, 1896; Harvey Medical College, Chicago, 1897; Dunham Medical College, Chicago, 1899; aged 76; died, June 20, of chronic myocarditis and nephritis.

David C. Homan, Oglesby, Texas; Baylor University College of Medicine, Dallas, 1908; member of the State Medical Association of Texas; past president of the Coryell County Medical Society; aged 55; was shot and killed, June 4.

Benjamin F. Harden ⊕ Wellsburg, W. Va.; Jefferson Medical College of Philadelphia, 1881; past president of the Brooke County Medical Society; bank president; aged 81; died, June 2, of carcinoma of the pancreas.

Robert Lee Riley, New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1884; aged 75; died, June 21, in the Mercy Hospital of shock and hemorrhage following an operation for abdominal cyst.

John Henry Belt, Merritt Island, Fla.; Bellevue Hospital Medical College, New York, 1867; Civil War veteran; aged 94; died, June 21, in the Veterans Administration Facility, Bay Pines, of uremia and nephrosclerosis.

Dayton Davis Stone ⊕ Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1910; on the staff of the Highland Park General Hospital; aged 50; died, June 29, of coronary thrombosis.

Daniel Vincent O'Donnell ⊕ Bennington, Vt.; University of Vermont College of Medicine, Burlington, 1904; on the staff of the Henry W. Putnam Memorial Hospital; aged 58; died, June 18, of heart disease.

Jesse Johnson Willingham ⊕ State Sanatorium, Ark.; Rush Medical College, Chicago, 1897; on the staff of the Arkansas Tuberculosis Sanatorium; aged 71; was accidentally drowned, June 30, while fishing.

Edward Maupin Gayle, Portsmouth, Va.; University of Virginia Department of Medicine, Charlottesville, 1902; formerly on the staff of the Parrish Memorial Hospital; aged 60; died, June 22, of heart disease.

J. W. Robinson, Medford, Ore.; Willamette University Medical Department, Portland, 1878; formerly mayor of Jacksonville; aged 88; died, June 23, in the Community Hospital of pulmonary edema.

Lewis Edward Kelly, Berkeley, Calif.; Hahnemann Medical College of Philadelphia, 1876; Civil War veteran; aged 94; died, June 4, of bronchial pneumonia, arteriosclerosis and chronic myocarditis.

Frank Victor Johnson ⊕ Maquoketa, Iowa; Bennett College of Eclectic Medicine and Surgery, Chicago, 1897; aged 68; died, June 2, in the Finley Hospital, Dubuque, of carcinoma of the lung.

Clinton Elmer Hunter, Jennings, La.; Chicago Homeopathic Medical College, 1901; aged 72; died, June 1, in a hospital at Lake Charles of carcinoma of the cecum and ascending colon.

Charles Bruce Walls, Chicago; Chicago Homeopathic Medical College, 1894; aged 81; died, June 24, in the Veterans Administration Facility, Hines, Ill., of bilateral pyelonephritis.

Najib Nassif Sallume, Toledo, Ohio; Baltimore Medical College, 1896; member of the Ohio State Medical Association; aged 69; died, June 30, of coronary occlusion and vascular sclerosis.

Solon L. Coleman, Uniontown, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1898; aged 64; died, June 4, in a hospital at Selma, of cerebral hemorrhage.

Oscar Lee Bailey ⊕ Ocean Springs, Miss.; St. Louis College of Physicians and Surgeons, 1892; for many years bank president; aged 68; died, June 21, of carcinoma of the pancreas.

Juba Everett Pickering, Brooklyn; College of Physicians and Surgeons, Baltimore, 1908; served during the World War; aged 58; died in June as the result of slashing his wrists.

Milton Louis Brenner ⊕ Houston, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1918; aged 45; died, June 21, of uremia and heart disease.

Louis Bartholomew Niquette, Northampton, Mass.; University of Vermont College of Medicine, Burlington, 1880; aged 80; died, June 16, of chronic myocarditis.

Dominic P. Thill ⊕ Milwaukee; Milwaukee Medical College, 1900; aged 67; died, June 8, in St. Joseph's Hospital of coronary occlusion, myocarditis and hemiplegia.

Moses Malcolm Knoller, Brooklyn; Long Island College Hospital, Brooklyn, 1909; member of the Medical Society of the State of New York; aged 51; died, May 23.

Burton George Mead Robinson, Washington, D. C.; Howard University College of Medicine, Washington, 1911; aged 58; died, June 5, of gastric carcinoma.

Byron N. E. Spees, Glenns Valley, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1891; aged 70; died, May 4, in St. Francis Hospital, Beech Grove.

Frank E. Wilson, Jeffersonville, Ohio; Hahnemann Medical College and Hospital of Philadelphia, 1891; aged 70; died, June 7, in St. Paul of cerebral hemorrhage.

Fannie Kimball Fiester, Austin, Minn.; Woman's Medical College, Chicago, 1891; Hahnemann Medical College and Hospital, Chicago, 1893; aged 71; died, May 6.

Stanley O. Newcomb ⊕ Ida, Mich.; Detroit College of Medicine, 1904; veteran of the Spanish-American War; aged 61; died, June 27, of coronary thrombosis.

William Allen Cathcart, Wallaceburg, Ont., Canada; University of Toronto Faculty of Medicine, 1915; aged 46; was killed, June 7, in an automobile accident.

Harriet E. Adams, Horton, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1894; aged 71; died, June 15, of myocarditis.

Luzerne Coville, Arlington, Va.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889; aged 72; died, June 23.

Charles F. Otis Sr., Rochester, N. Y.; Hahnemann Medical College and Hospital, Chicago, 1882; aged 78; died, June 12, at his home in Honeoye Falls.

James Michael Glynn, Chicago; Rush Medical College, Chicago, 1892; member of the Illinois State Medical Society; aged 71; died, July 3, of uremia.

William Everett Long, Buffalo; Homeopathic Hospital College, Cleveland, 1880; aged 79; died, June 8, in the Millard Fillmore Hospital of uremia.

William James Kerr, Oakland, Calif.; University Medical College of Kansas City, 1900; aged 59; died, June 11, of coronary thrombosis and diabetes.

Willis Isaac Purdy ⊕ Middletown, N. Y.; University of the City of New York Medical Department, 1882; aged 84; died, June 5, of arteriosclerosis.

Clayton P. House, Oroville, Wash.; University of Vermont College of Medicine, Burlington, 1881; aged 80; died, June 13, in a hospital at Medical Lake.

Johann Hermann Meyer, San Bernardino, Calif.; Jefferson Medical College of Philadelphia, 1901; served during the World War; aged 60; died, June 26.

William Jackson Bolton, Washington, D. C.; College of Physicians and Surgeons, Baltimore, 1892; aged 67; died, June 18, in the Casualty Hospital.

Lemuel E. Davies, Miami, Fla.; Hahnemann Medical College and Hospital of Philadelphia, 1896; aged 69; died, June 16, of cerebral hemorrhage.

Edgar Gilmore Givhan ✠ Montevallo, Ala.; Medical College of Alabama, Mobile, 1894; aged 67; died, June 3, of carcinoma of the prostate.

John T. Barnett, Jonesboro, Ind.; Kentucky School of Medicine, Louisville, 1882; aged 80; died, June 30, of chronic myocarditis and nephritis.

Clarence Winfield Pierce Foss ✠ Brunswick, Maine; Medical School of Maine, Portland, 1895; aged 68; died, June 22, of coronary occlusion.

John C. Travers, Baltimore; University of Maryland School of Medicine, Baltimore, 1895; aged 65; died, June 11, of coronary thrombosis.

George Ignatius Lythcott, Tulsa, Okla.; Boston University School of Medicine, 1913; served during the World War; aged 52; died, May 1.

Thomas I. Marks, Halsey, Ore.; University of Oregon Medical School, Portland, 1896; aged 67; died, June 16, of coronary thrombosis.

Oscar F. Plummer, Macon, Ill.; St. Louis College of Physicians and Surgeons, 1903; aged 67; died, June 14, of cerebral hemorrhage.

William Everett Jonah, Atlantic City, N. J.; Medical School of Maine, Portland, 1900; aged 64; died, June 8, of coronary occlusion.

Wilfred Kennedy Keith ✠ Creston, Iowa; Rush Medical College, Chicago, 1894; aged 66; died, June 30, in Los Angeles, of angina pectoris.

Joseph Hooker Callbreath, Encanto, Calif.; Long Island College Hospital, Brooklyn, 1890; aged 74; died, June 2, of cerebral softening.

George Stewart Allen, Mackinaw, Ill.; Rush Medical College, Chicago, 1902; also a dentist; aged 70; died, May 5, of heart disease.

Annie Amelia Backus, Port Rowan, Ont., Canada; Hahnemann Medical College and Hospital, Chicago, 1889; aged 75; died, June 16.

Albert I. Babendreer, Ocean Springs, Miss.; Pulte Medical College, Cincinnati, 1899; aged 70; died, June 20, of mediastinitis.

Harrison Thomas Healy, New Bedford, Mass.; Baltimore Medical College, 1907; aged 55; died, June 1, of chronic myocarditis.

H. A. J. Watkins, Magee, Miss.; University of Louisiana Medical Department, New Orleans, 1883; aged 85; died, May 7, in Jackson.

James B. Nash, University City, Mo.; St. Louis College of Physicians and Surgeons, 1901; aged 63; died, June 14, of nephritis.

Charles Edward Gardiner, Brooklyn; Long Island College Hospital, Brooklyn, 1899; aged 61; died, June 15.

Walter Lee Dodson, Reform, Ala.; Medical College of Alabama, Mobile, 1906; aged 59; died, June 16.

George H. Harbarger, Coalton, Ohio; Ohio Medical University, Columbus, 1893; aged 66; died, June 17.

Burley Carl Bain, Bentonville, Ark. (licensed in Arkansas); aged 68; died, June 16, of myocarditis.

Frederick Winnett, Toronto, Ont., Canada; Trinity Medical College, Toronto, 1886; died, June 16.

Pinckney K. Carson, Hohenwald, Tenn. (licensed in Tennessee in 1889); aged 82; died, May 20.

Junius M. Armstrong, Garland, Texas; Dallas Medical College, 1903; aged 56; died, May 25.

Erastus A. Tuttle, Englewood, Colo. (licensed in Colorado in 1900); aged 89; died, June 28.

Oscar Louis Lennard, Atoka, Okla. (licensed in Oklahoma in 1935); aged 60; died, June 17.

Bureau of Investigation

A FRAUDULENT GALLSTONE CURE

The Home Drug Company of Minneapolis Declared a Fraud and Debarred from the Mails

A Minnesota quack, one Bert Victor Lares, M.D., has for some years conducted a fraudulent medical mail-order business known as the Home Drug Company. In spite of the fact that the Food and Drug Administration in 1935 prosecuted and fined Lares' company and declared his "gallstone cure" a fraud, and in spite of the further fact that in 1936 the Federal Trade Commission proceeded against the Home Drug Company, the business continued until November 1937, at which time the Post Office Department issued a fraud order against the Home Drug Company and its officers and agents.

B. V. Lares, according to the records of the American Medical Association, was born in New Hampton, Iowa, in 1874 and holds a diploma from the University of Minnesota College of Homeopathic Medicine and Surgery, issued in 1900. For some reason not clear, the state of Minnesota granted Lares a license to practice medicine in 1897—three years before he is shown to have received his diploma. The medical directories show Lares in St. Paul in 1900, in Maple Plain, Minn., in 1902 and 1904, in Delano, Minn., from 1906 until 1918, and at Minneapolis from 1921 to date.

GALL STONE COLIC

Doctor's Private Prescription Gives Marvelous Results

Mrs. J. R. Douglas

SHE WANTS OTHER WOMEN TO KNOW HER COMFORT

"After suffering for seven years with gall bladder and liver trouble and having tried several different kinds of medicine without relief I was told to have an operation.

"I did not want one until I had tried everything for gall stone trouble. My aunt recommended your Prescription No. 69, and after the first bottle I felt a great change. Since taking the treatment, words cannot express how thankful I am. I am telling this for the benefit of other sufferers. If you want relief, get this doctor's prescription. It will save you money and give you new life."

Avoid operations. Treat the cause in a sensible, painless, inexpensive way at home with a recognized practicing specialist's prescription for liver, gall bladder and stomach trouble which have given gratifying results for 28 years. Write for Free Literature to

HOME DRUG CO.,
18-P N. 4th St., Minneapolis, Minn.

The Home Drug Company was started in 1926 by Lares and a former advertising man, one D. A. Lundy. Each put in $100 to start the company. Four years later, in 1930—so profitable is mail-order quackery—the enterprise was incorporated under the laws of South Dakota with a capitalization of $100,000, the stock, according to the report of the Post Office Department, being held by Lares and Lundy and their respective wives! Lares was president of the concern and Mrs. Lares vice president, while Lundy was secretary-treasurer and advertising manager. Lares' scheme was to advertise that he had a cure for gallstones, a medicine that he called "Prescription No. 69" and which, he declared, would "dissolve" gallstones. In his advertisements he also declared that Prescription No. 69 was the prescription of a physician who had for years specialized in gallbladder disease.

During the hearing at Washington, Lares testified that he took a three year homeopathic course in the University of Minnesota College of Homeopathic Medicine and Surgery,

although he admitted that he had never been graduated by a high school. Lares' evidence at the hearing demonstrated that the man was in no sense of the word a specialist in diseases of the liver and gallbladder and that such few cases of that kind as he had were quite incidental to the general practice in which he had been engaged. In 1917 Lares secured a commission as first lieutenant in the Medical Corps of the United States Army and served therein, without reaching the front, for a period of about eighteen months, during the course of which he was advanced to a captaincy. He admitted that he did not treat a single case of gallstones during this period but that his duties consisted of training stretcher-bearers, performing vaccinations and inoculations, prescribing for constipation, and so on.

In 1919 Lares again entered general practice, this time in Minneapolis. In 1921 Minneapolis and St. Paul papers reported that Lares had been arrested following the death of a 21 year old girl who was said to have died from peritonitis following an alleged illegal operation. Lares was later released, according to the Post Office report. On a later date Lares was again arrested, found guilty and fined on charges of "compounding without a registered pharmacist."

The memorandum of Judge Karl A. Crowley, Solicitor for the Post Office Department, to the Postmaster General, recommending the issuance of a fraud order, shows that while the Home Drug Company was prosecuted in September 1935 under the National Food and Drugs Act for making fraudulent therapeutic claims for its Prescription No. 69, found guilty and fined $50, and while in February 1936 the Federal Trade Commission ordered the Home Drug Company to cease representing that Prescription No. 69 was an effective remedy for gallstones, nevertheless the Home Drug Company continued to advertise that its "patent medicine" would cure gallstones. The explanation may lie in the further fact that the evidence in the case also showed that the receipts of the Home Drug enterprise at the time of the hearing approximated $27,000 annually!

As an interesting sidelight, Lares was said to have testified at the hearing that, since the company had been formed, it had expended large sums for attorneys' fees "in an effort to avoid adverse action by the Federal Trade Commission and other governmental agencies." It is a well known fact that it is not uncommon for men who, having previously as government officials had to prepare cases against fraudulent mail-order concerns later would leave the government service and set up as "experts" in dispensing information—for a fee—which would show concerns how to skate on as thin ice as possible without breaking through.

When "Prescription No. 69" was analyzed by the federal chemists in preparation for the case of the Food and Drug Administration against the Home Drug Company, the chemists reported that the stuff "consisted essentially of glycerin, with small proportions of oxgall and bile acids." According to the alleged formula furnished by Lares to the Post Office Inspector, Prescription No. 69 contained very small quantities (homeopathic?) of chelidonium, chionanthus, cinchona, colocynth, dioscorea, hydrastis, iris, leptandra, podophyllum, bile salts and strychnine. Lares' concern also put out a pill that it called "Laxative Triangles" and which contained phenolphthalein, bile salts and cascara.

While Lares' lawyers contended that the Home Drug Company treatment was "based on homeopathy," the facts were that it was the veriest mongrel—neither homeopathic nor scientific in character. According to Lares' testimony, his idea in mixing up his medicines was "to put all possible remedies that his patients would likely be needing later into a single mixture." He based this on the interesting, if not convincing, theory that "only the drug particularly indicated would act at a given time and that, when the indications for that particular substance had passed, its action would cease and the other drugs in the preparation would thereon rotate and come into play successively as needed." Thus Lares, in order to justify his quackery, endowed his conglomerate mixture of homeopathic and other drugs with more than human intelligence. At the time of the hearing Lares was asked why, if his theory was good, it would not be simpler to make a mixture of all the drugs in the homeopathic armamentarium, so that every disease imaginable could be properly treated as the occasion arose! Lares opined, however, that such a pill would "take too much room" and characterized the inquiry as "traveling into the ridiculous." It obviously depended on whose ox was gored.

Lares testified at the hearing also that his so-called treatment was directed solely to the "symptoms" of gallstones and other ailments so fluently described in his advertising, and he volunteered that, when prescribing homeopathically, "I don't care whether it is cirrhosis of the liver or ingrowing toe-nails."

On November 15 Judge Crowley declared that the evidence showed the business of the Home Drug Company to be a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, and recommended that a fraud order be issued. On November 17 Postmaster General Farley issued the fraud order.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

DANDRUFF

To the Editor:—What is considered the most efficient method for the treatment of dandruff? H. F. SCHROEDER, M.D., Marinette, Wis.

ANSWER.—Dandruff is the popular name for fine exfoliation that occurs in seborrhea sicca of the scalp. Once the disease is arrested, it usually requires continued attention over a further period to prevent recurrence.

The scalp should be kept clean by washing with soap and water sufficiently often to keep it clean. The more oily the scalp, the more frequently should it be washed. No more definite rule for frequency can be framed. The average man's scalp may be safely washed every week and many as often as twice a week or oftener. Frequently an accompanying itching of the scalp yields to mere washing. For severe seborrhea with crusting, oil cleansings are more satisfactory.

If there are any indications for systemic treatment, these, of course, should be met. An anemia may require iron or liver; an imperfect digestion needs attention; and always the bowels should be regularized.

Of the many local remedies for seborrhea of the scalp, not one is more useful than sulfur. It is best used in the form of a pomade, at least at the beginning of treatment. Wool fat, lard, petrolatum or cold cream may be used by themselves or in combination as bases. They can be softened by the addition of oil. The objections to their use is that they grease the hair excessively and they do not wash easily from the scalp. Usually the patient applies too much material, more than is necessary, and is careless in getting it on the hair. An oil shampoo before the use of soap and water facilitates removal. There are more elegant menstruums on the market in the form of oils, but these cost more and are not essential. Sulfur may be used in the form of solution of sulfurated lime (Vleminckx's solution) diluted to fit the circumstances. In the beginning the scalp can accommodate a mixture of one part of the solution to seven of water. This can later be given less diluted and a few can stand a full strength solution. It is best applied with a medicine dropper before retiring, less often when the scalp condition is improved.

Mercury in various forms is excellent. The official ammoniated mercury ointment may be used or mixed with an equal or twice its quantity of base. Mercury bichloride is excellent in lotions. It may be used in the proportion of 1 in 1,000 to 1 in 10,000. The addition of salicylic acid and resorcinol increase the value of these lotions. Resorcinol should not be used on blond or red hair.

Ultraviolet rays are sometimes useful for seborrhea of the scalp. It is not necessary to produce an erythema. The scalp should be washed before exposures to facilitate the penetration of the rays. Massage has been lauded by some as improving the circulation of the scalp, but its capacity for good is doubtful.

ANGIOMA OR CIRSOID ANEURYSM OF SCALP

To the Editor:—A woman aged 35, in good health, has for the last twelve years had hemorrhages from the scalp just above and in back of the left ear. These hemorrhages have been profuse and were easily stopped by coagulation of the bleeding point by means of diathermy. Since the last coagulation several weeks ago, the posterior auricular artery has dilated considerably from a point midway between the cartilage of the ear and the left mastoid. This dilatation is more pronounced as it proceeds up to the scalp. There is redness of the skin underlying the distal part. Pulsations are not only easily felt but easily seen. At times the patient feels as though there were a veil passing over the left eye, but this is only momentarily. Would it be wise to ligate this vessel at its origin or between the mastoid and cartilage of the ear?

M.D., Wisconsin.

ANSWER.—The changes in the skin, the dilatation of the posterior auricular artery and the location of the diseased area suggest a diagnosis of some easily bleeding tumor such as an angioma or a cirsoid aneurysm. The latter occurs on occasion in the scalp in this area.

Raymond W. McNealy has written an excellent article on aneurysms of this nature in Dean Lewis's Practice of Surgery (Hagerstown, Md., Prior & Co., 1932, vol. 12, chapter 5, section 4, pp. 101-157). It would appear that the condition is due to an abnormal communication between veins and arteries. This may take place in a number of different ways and from different causes such as from a nevus or telangiectasis, from a deep congenital anomaly of the blood vessels (deep nevus), from a single severe trauma, or from a number of minor traumas.

There is present in these tumors a tortuous mass of dilated vessels beneath the scalp. The overlying skin is congested and there is not only a thrill but an auscultatory murmur. Spontaneous bleeding such as described is not often a symptom. There are many procedures aimed at cure. McNealy states that a modern standard procedure would be more or less as follows: (1) ligation of the external carotid artery, (2) ligation of the secondary trunks such as the temporal, occipital and auricular arteries, (3) ligation of the main trunks at the edge of the mass, and (4) extirpation of the mass following its reduction in size because of the procedures listed.

The information given does not enable an accurate diagnosis, but it would appear that cirsoid aneurysm is a likely cause of the difficulty. There is another possibility and that is a traumatic aneurysm due to a weakening of the wall of the artery following diathermy.

In this case ligating the artery distally and proximally to the dilatation would probably be sufficient to end the difficulty. Radiation therapy is not apt to succeed if the vessels involved are large. Injection therapy has been largely abandoned.

The cause of the original hemorrhages over a period of years from the scalp remains obscure in the absence of more detailed information.

HERNIA DEVELOPING IN ATHLETE

To the Editor:—A physician aged 53, a former athletic director, performed many heavy athletic duties, including wrestling and heavy lifting, up to several years ago. While he was lifting a heavy object about a week ago an inguinal hernia occurred. Could there be an inherited weakness in this region? If so, how could he have performed for many years such strenuous athletic work without any such occurrence? The hernia is small and not troublesome to any extent. What treatment is advisable?

S. A. KLEGER, M.D., Astoria, Ore.

ANSWER.—The development of an indirect inguinal hernia is usually due to the failure of obliteration of the peritoneal process extending to or in continuity with the processus vaginalis of the testicle. At times this patency is limited to a slight funnel shaped dimpling of the peritoneum at the internal ring which is fixed by the obliterative portion extending into the cord.

Not infrequently there is an associated weakness of the structures of the abdominal wall medial to the internal ring and when associated with a patent peritoneal process and increased abdominal pressure a hernia early in life usually results. Occasionally muscle weakness alone may predispose to a hernia at the internal ring.

There are several factors which tend to delay the development of an indirect hernia in the presence of some inherited or acquired weakness: (1) when the neck of the sac at the internal ring is unusually small; (2) when the abdominal muscles are well developed by inheritance or through progressive physical activity, so that the internal ring is well protected at all times; (3) the absence of extreme or prolonged intra-abdominal pressure or debilitating illness or a combination of these factors, with good muscle defense.

There are other factors which tend to predispose to the late development of an indirect hernia: 1. Usually and normally there is a decrease in physical activity and muscle strength. This may start before the age of 30 as the result of a sedentary occupation but usually takes place to some extent by 40 and almost invariably at 50. 2. The frequent increase in weight in men after 25 or 30 and especially after 50 increases the intra-abdominal tension but also is almost constantly associated with some decrease in muscle strength and tone at the internal ring. 3. Following a decrease in muscle strength and tone, any unusual increase of abdominal pressure such as lifting a heavy object, a sudden strain or effort, a chronic cough and other factors may overcome the protective muscle defense at the internal ring and initiate a hernia.

In the instance in question there may have been a slight or even a considerable patency of the peritoneal process which was attached to its obliterated portion in the cord at the internal ring. Good muscle development and tone protected the internal ring during the years of strenuous activity. Several years after giving up these activities and following a severe effort or strain, this patient had a hernia. Lack of muscle defense at the vulnerable internal ring probably resulted from lessened activity and from increased age.

In the absence of contraindications, the hernia should be operated on without unnecessary delay. Otherwise a properly fitting truss should be worn.

POSSIBLE MILIUM CONGENITALE IN INFANT

To the Editor:—A baby, aged 10 weeks, for two weeks has had minute nonitching vesicles over the face, scalp, anterior part of the neck and upper anterior part of the chest. They appear to be in the skin but do not break. Those on the chest are surrounded by a small areola of red but elsewhere do not appear to be associated with much inflammatory reaction. The baby is on a formula of Karo, partly skimmed milk and water, with orange juice and cod liver oil in the usual quantities, and is doing well from a nutritive standpoint. He is bathed with Ivory or castile soap and the creases are oiled with Mennen's Baby Oil. I know of no material that comes in contact only with the skin area mentioned. Cod liver oil is now being omitted from the diet. Orange juice was omitted for one week without results. The baby is on small doses of ultraviolet rays for want of something better to do. I dislike changing the entire formula unless necessary, as in the first few days of the baby's life I had a hard time getting the digestive system oriented when the mother's milk failed.

M.D., New York.

ANSWER.—The lesions on this newborn infant's skin, from the description, might well be milium congenitale. Milia are small whitish nodules in the skin, especially of the face. They are usually retention cysts of the sebaceous glands or hair follicles. The lesions may be present at birth and occur on the scalp and face. They are reddish, pale red-yellow or yellow lesions and vary from pinpoint sized papules to well defined patches. Crocker, who described this condition, believed that the lesions were the result either of miscarried embryonic epithelium or of the adherence of the amnion at an early stage of fetal life. An excellent illustration of milium congenitale in a newborn infant, taken from the collection of C. Leiner, may be found in Pfaundler and Schlossmann's Handbuch der Kinderheilkunde, fourth edition, volume 10, "Die Hautkrankheiten des Kindesalters" (Berlin, F. C. W. Vogel, 1935, p. 267). The infant's diet need not be altered, as the lesions would not be affected by changes in food.

ELECTRIC MASKS FOR HAY FEVER

To the Editor:—I have noticed numerous advertisements of various masks with electric batteries, also numerous other gadgets to insert into the nostrils for the control of hay fever. Will you kindly discuss the relative merits, if any, of these contraptions?

W. E. DELICATE, M.D., Edwardsville, Ill.

ANSWER.—A device of the aforementioned description, called the Allergy Electric Mask, has been placed on the market by the Allergy Research Institute of Cincinnati. This device consists of a double wall metal cup, perforated to permit passage of air and by means of a soft rubber face piece fitting tightly over the mouth and nostrils. It is held there by ribbons which tie around the head. Between the two walls is placed a filtering paper. The positive pole is connected to one metal cup and the negative to the other cup. Claims are made that the pollen particles are precipitated by the potential on the charged plates. Those particles that are not caught by means of the electrostatic precipitating process are trapped by means of the paper filters.

Insufficient critical evidence has been made available to substantiate the claim that a potential of 1½ volts produces a force of sufficient strength to attract particles and hold them, to be of any great value in the removing of pollen for hay fever relief. To filter efficiently by the Cottrell process of electrostatic precipitation, potential of several thousand volts is required to attract the pollen particles and hold them to

the plates. It is possible that what filtering efficiency this mask may have is due largely to the filter paper between the two charged plates. It is probable that, if the patient is willing to wear the mask, a considerable portion of the pollen will not reach the mouth or nostrils. There is, however, another port of entry for pollen, namely the eyes; hence the wearing of this mask is no assurance that the patient will obtain relief from hay fever symptoms. Furthermore, unless the patient is careful, leaks occur between the skin and the rubber, thereby reducing the efficiency of the mask.

PROBABLE NEUROSYPHILIS: TREATMENT

To the Editor:—A white man aged 50, a cook, married but without children, contracted syphilis in 1918 while in the navy. He received three intravenous injections and several in the hip. For about two years he took some form of mercury pills. The patient felt perfectly well until about two years ago, when he began to complain of impairment of memory, irritability and a peculiar sense of pressure along the upper part of the spine. I first saw him in March 1938. He was well developed, was 66½ inches (168 cm.) tall and weighed 164 pounds (74 Kg.). There was no apparent heart lesion, the blood pressure was 144 systolic and 88 diastolic, the Kahn reaction was 4 plus, and urine and Romberg tests were negative. The tendon reflexes were hyperactive. The pupils were markedly miotic. The ophthalmologist found visual acuity normal and the visual field restricted in the temporal palpebral quadrants. The optic nerve was slightly affected, and blood vessels showed moderate arteriosclerosis. There were some areas of chorioretinitis in all stages from old to new. The patient has been treated with bismarsen intramuscularly weekly for five weeks, the first injection being 0.1 Gm. and the following four injections 0.2 Gm. He then received 0.2 Gm. every fourth day and has had a total of ten injections to date. He also had 10 minims (0.6 cc.) of potassium iodide three times a day for two weeks, rest for one week, and then a repetition of the treatment. His Kahn reaction is still 4 plus. His urine has been normal. Subjectively he has improved in that his memory is better, he is not irritable, he says he has more "pep," and the sense of pressure in the spine has left him. Contraceptives have been used and the wife has never been pregnant. Will you kindly outline a course of treatment? Probably you will suggest a spinal fluid examination. If positive, how would this affect the treatment?

M.D., Maine.

ANSWER.—From the data furnished it would seem that the patient has neurosyphilis, and in view of this it would be advisable to examine his spinal fluid immediately. This would be done not only to confirm the impression that the infection has invaded the nervous system but also to determine the character of the spinal fluid involvement. The loss of memory and irritability suggest, of course, that the patient may be in an early phase of dementia paralytica. The eye condition might well represent a complication of the syphilis, and it would seem advisable to continue with arsphenamine, bismuth and potassium iodide before changing the program of treatment. Neoarsphenamine or arsphenamine should be given for a series of approximately ten injections in conjunction with at least twenty injections of a bismuth compound and potassium iodide by mouth. At the end of this treatment the spinal fluid should be reexamined and, if there is not any material change in it, it would seem that the patient would be a candidate for fever therapy, particularly if he manifests the paretic type of spinal fluid. The treatment outlined would tend to prevent complications in the visual tract from fever therapy. The treatment subsequent to the malarial course must be guided by the response the patient makes to fever therapy, but in all probability further treatment with arsphenamine and a bismuth compound will be necessary approximately three months after the fever course. In view of the condition of the eye it would be inadvisable to give tryparsamide.

WOOL FAT AND LIQUID PETROLATUM FACE CREAMS

To the Editor:—Please discuss wool fat and liquid petrolatum creams as to efficiency and danger for growing hair. How do your regard almond, olive and mineral oils for use in face creams?

M.D., Maryland.

ANSWER.—Hydrous wool fat (adeps lanae hydrosus, lanolin) is obtained from the fat of sheep's wool. It resembles wax, consisting of cholesterol and isocholesterol either in free state or combined as esters of fatty acids; in this respect it differs from usual animal and vegetable fat in that it does not contain the glycerin esters of fatty acids. It has long maintained its popularity as an ingredient of pharmaceutic ointments and cosmetic creams. In cosmetic form it is highly commended as an excellent emollient. When purified it is practically inodorous, blends well with many drugs and cosmetic ingredients, and does not readily become rancid. Because of its sticky tendency, no more than from 3 to 5 per cent is used in creams, to which mineral oils are usually added for their lubricating quality. Wool fat it available in two forms, hydrous and anhydrous. Wool fat is used in conjunction with water soluble materials and employed for pharmaceutic purposes, whereas anhydrous wool fat is used cosmetically. There is no proved tendency in wool fat toward the promotion of hair growth. It has only rarely caused allergic symptoms (Ramirez, M. A., and Eller, J. J.: The "Patch" Test in "Contact Dermatitis," *J. Allergy* **1**:489 [Sept.] 1930).

Liquid petrolatum, a synonym for which is mineral oil, is derived from various forms of petroleum. It is valued for its detergent and lubricating power, which makes the oil an important ingredient of cleansing creams. Liquid petrolatum has no power of skin penetration. It will not stimulate hair growth. Its great advantage is the lack of tendency toward rancidity, because it is not a fat. Almond and olive oils, which are vegetable fats and are more emollient in action, easily become rancid and lack the detergent qualities of the mineral oils. Impurities in any of these products may cause them to be irritating. There are also rare cases of allergy. For examples see: Coca, Walzer and Thommer, "Asthma and Hay Fever in Theory and Practice," and R. P. White, "Dermatoses or Occupational Affections of the Skin," page 274.

ARSENIC AND ACUTE STUPOR

To the Editor:—A Polish laborer aged 53 was run over by an automobile while lying in the street. His past history was essentially negative except for two attacks of "grip" fifteen and eight years ago. He was seen at 6 p. m. and stated that he was in excellent health. Between that time and his death he had two beers and one shot of whisky. At about 7:15 he was said to have been staggering. At 7:45 he was run over by the automobile and witnesses claim that he was lying in the road in a stupor. Autopsy and chemical examination of the stomach revealed 2¾10 grains (0.15 Gm.) of arsenic in the stomach, spleen and kidney. How much arsenic is necessary to produce such an acute stupor? Please refer me to the latest literature on arsenic poisoning.

M.D., Massachusetts.

ANSWER.—The amount of arsenic necessary to produce an acute stupor varies with individuals and cannot be fixed but is usually large. The amount absorbed is the important factor. Arsenic in the stomach contents is not important from this standpoint. In the case cited no distinction is made between arsenic in the stomach (contents?) and that in the spleen and kidney. The liver, brain and kidney are the organs to examine in acute cases. The minimal fatal dose is 3 grains (0.2 Gm.) absorbed, but that amount is not adequate to produce acute stupor, which is rare under any conditions. Experimental evidence indicates that alcohol favors either the absorption or the retention of arsenic in the organs.

References:

Webster, R. W.: Legal Medicine and Toxicology, Philadelphia, W. B. Saunders Company, 1930.
Gonzales, T. A.; Vance, Morgan, and Helpern, Milton: Legal Medicine and Toxicology, New York, D. Appleton-Century Company, 1937.
Witthaus, R. A.: Medical Jurisprudence, Forensic Medicine and Toxicology, New York, William Wood & Co., 1911. Still consulted because of its exhaustive study of a large series of cases.
Zimmermann, E., and Remy, E.: *Arch. f. Gewerbepath. u. Gewerbehyg.* **7**:486 (Dec.) 1936.

DANGERS OF PESSARY FOR CONTRACEPTION

To the Editor:—Is the flexible cone pessary an acceptable product and without danger to the cervix uteri as far as hemorrhage, cancer and erosion of the cervix are concerned? I have received literature on this contraceptive device. It is a pliable rustless chromium wire covered to a thickness of one thirty-second inch with soft pure rubber. I have been told that short wave diathermy treatments cannot be given to the pelvis when the Gomco contraceptive metallic chain is in the uterus. Its temperature is supposed to be raised to such an extent that it produces a burn during a short wave diathermy treatment. Would it be all right to give long wave diathermy treatments to the pelvis to a patient with the rubber coated flexible cone pessary in the cervix?

M.D., Minnesota.

ANSWER.—Occasionally in selected cases of dysmenorrhea and amputation of the cervix, with obstruction of the outlet of the uterus, a cervical pessary is of distinct value. In these cases the pessary should be removed after two or three months and it may not have to be replaced. Intracervical pessaries which are used for contraceptive purposes are nearly always a menace to life and health and therefore should never be used. Many complications have arisen following their insertion, including cervical "erosions" and bleeding. It has not been proved that cancer has arisen following the use of these devices. In some cases death due to infection has resulted directly from their use. Whereas intra-uterine foreign bodies for the purpose of preventing conception are not as dangerous as intracervical appliances, they also should not be used. If these suggestions are followed there need be no fear concerning the use of short or long wave diathermy in the presence of metallic foreign bodies in the uterine or cervical canal.

RECUMBENT HYPOTENSION AND POSSIBLE DIAPHRAGMATIC HERNIA

To the Editor:—A woman aged 49, with some of the nervous manifestations of the menopause, has a blood pressure of 180/140 in the sitting position and only 95/60 while recumbent. In spite of bromides and various sedatives, she persistently complains of insomnia because of feelings of pain around her heart, sensations of pressure in the upper part of the abdomen and gurgling of gas interpreted as borborygmi. She had a cholecystectomy two years ago, which failed to relieve the pains and discomfort in the upper part of the abdomen. She had had symptoms of spastic colitis and has been treated for this without much relief. Physical examination reveals no manifestations except visceroptosis, verified at the laparotomy two years ago, moderate obesity and tenderness all through the upper part of the abdomen and down into the left side. Laboratory tests reveal a red blood count of 2,850,000, hemoglobin 65 per cent, alcohol histamine meal showing no free acid and only 3 points of total acid, no occult blood, and several gram-negative large rod-shaped bacilli. Blood smear shows 57 per cent polymorphonuclears, 31 per cent lymphocytes and no abnormal red cells or nucleated reds. Could the pain and discomfort in the upper part of the abdomen and heart region be in any way associated with the recumbent hypotension?

W. L. SHARP, M.D., Anderson, Ind.

ANSWER.—Such variations of the arterial tension as recorded are extremely unusual. It would be interesting to know whether these violent fluctuations have been observed repeatedly and consistently or only on one occasion. The pressure of 180/140 is in itself rather unusual; a pulse pressure of but 40 mm. is small and suggests myocardial inadequacy. It is unfortunate that no mention is made of the pulse rate in the two positions or whether there is any asymmetry of the tension in the two arms.

The other clinical observations are highly suggestive of diaphragmatic herniation with intrathoracic eventration of abdominal viscera. The visceroptosis is suggestive of poor musculature; the symptoms of diaphragmatic hernia are almost invariably greatly exaggerated in the recumbent position. Approximately 95 per cent of diaphragmatic hernias occur on the left side. The contents of these hernias vary greatly; there may be herniation of a single organ or almost all the abdominal viscera.

The symptoms of diaphragmatic hernia are extremely variable. Often the first clear clinical picture is a simulation of acute obstruction of the bowel. The diagnosis is more frequently in error than correct in these patients. They are often treated (both surgically and medically) for heart disease, peptic ulcer, cholecystitis, irritable colon, colitis or carcinoma of the esophagus for years before the true nature of the disease is determined. The proof of diaphragmatic hernia depends on x-ray visualization of abdominal viscera within the thoracic cavity.

In the present instance, correction of the severe anemia should be done prior to any attempt at surgical procedure.

DIATHERMY AND HYPERTENSIVE RETINITIS

To the Editor:—A man aged 65 became almost completely blind in early manhood when a ball struck him in the right eye. At present vision is 10/200 with an extensive central area of chorioretinitic degeneration. In November 1937 the vision of the left eye was corrected to 20/20 and no retinal abnormality was noted. Three weeks later serious loss of vision occurred. Reexamination of the left eye showed retinal hemorrhages and exudates in the macular area; vision was 20/100. Subsequent hospital examination indicated hypertensive retinitis and suggested that the macular lesions were of vascular origin associated with general arteriosclerosis. Blood pressure was 158 systolic, 80 diastolic. My own examination of palpebral peripheral vessels shows no thickening or hardness of the vessel walls. There is von Recklinghausen's disease of the skin of moderate severity. All laboratory tests and physical examination are essentially negative. He has received potassium iodide for one and one-half months with no resorption or visual improvement. Smoking and drinking have been discontinued. Is there any danger in trying physical therapy, such as short wave, on the left eye? What routine should be used in applying it? What is the prognosis for visual improvement? Have you any suggestion as to medication?

M.D., New York.

ANSWER.—Short wave diathermy has been recommended by Gutsch for the conditions described (*Transactions* of the German Ophthalmologic Congress **51**:221, 1936). He used the Siemens ultratherm with glass shell electrodes placed from 1 to 3 cm. from the globe, and the current advised by the manufacturers for therapy; time from five to fifteen minutes, treatments from two to three times a week. He observed no harmful effects, but a few reports of retinal hemorrhage following such treatment are on record. It is certainly doubtful whether results could be expected by this method which would not be obtained by spontaneous absorption of hemorrhages. The use of large amounts of vitamin B as advised by Carroll in toxic amblyopia (*Arch. Ophth.* **18**:948 [Dec.] 1937) would have no particular application in this case. It might be tried as part of the general treatment in case damage to the nerve by nutritional deficiency might be an additional factor but without expecting too much from the method. General hygienic measures, especially rest and any other measure to control blood pressure, would offer the best chance of preventing further damage. A slight improvement of vision is sometimes observed in cases which are brought under such control. Control of the blood phosphorus content, elimination of sodium chloride from the diet and administration of ammonium chloride 1 Gm. four times a day, may be of value in controlling edema.

CORONARY THROMBOSIS IN WAR VETERAN

To the Editor:—An ex-service man aged 42 was suddenly seized with an acute coronary thrombosis. The diagnosis was verified by electrocardiography. His past history was entirely irrelevant and his family history was good. His habits were conservative. At no time since his discharge from the army has the patient been under any mental or physical strain, nor has he ever been subjected to any financial or domestic responsibilities. His occupation, barber, is anything but exacting. Since the etiologic factors ordinarily found in coronary disease seem to be absent in this individual, and in view of the rather early occurrence, is it too far fetched to assume that the ten months he spent in the front line trenches, with all the suffering and physical and nervous insults incident to modern warfare, may have been a contributing factor to the early development of this disorder? Have any studies been made or are any statistics available to show the incidence of coronary disease in war veterans? Is it possible that the present day increase in coronary artery disease may be the price that our heroes of 1918 may be paying in 1938?

M.D., New York.

ANSWER.—The question is whether a ten months period of military service in the front line trenches twenty years prior to the attack of coronary thrombosis might have been a contributing factor.

The data in the Veterans' Administration indicate a steady increase in the number of cases of coronary thrombosis for hospital treatment. In addition an increased incidence of coronary thrombosis has been found at necropsy. It must be concluded, therefore, that the increased incidence of coronary thrombosis in the ex-service population at this time is due to the aging of the veterans.

Considering all the information available with regard to the circumstances surrounding the case in question, it would be difficult to establish a causal relationship between military service twenty years ago and an acute attack of coronary thrombosis at this late date.

SUBCUTANEOUS ATROPHY FROM INSULIN

To the Editor:—A girl aged 6 years is now on her fourth year of insulin. The insulin has been given in doses varying from 3 units twice daily to 10 units three times daily, all possible regions of the body being used, and no one region used for more than a few doses in succession. Yet there have developed on the arms and legs five or six "atrophic areas," or areas of shrinking or indentation of soft tissues. The new protein zinc insulin has not been used. These areas began appearing six months ago and are increasing in size and number. Should this condition cause undue concern? Any suggestions would be appreciated.

ROBERT J. RALSTON, M.D., Holyoke, Colo.

ANSWER.—Almost invariably, areas of atrophy of subcutaneous fat due to insulin will disappear in time if injections are discontinued in the part of the body affected. Such areas are distinctly less common with protamine zinc insulin, but they may occur. This lower incidence is related probably to the fewer injections required and possibly to the neutral reaction of the material. To prevent the occurrence of new lesions, U-80 insulin, regular or protamine, is indicated, as is also care as to distribution of doses. By constant shifting of the site of injection, it should be arranged so that no one area receives insulin oftener than once in four weeks. One should remember that, in addition to the upper arms and thighs, the abdominal wall and flanks provide excellent sites for injections.

URETHROGRAPHY WITH BARIUM SULFATE, SODIUM IODIDE

To the Editor:—Is there any danger in the injection of barium sulfate into the urethra for x-ray purposes, if the solution goes into the bladder? If so, what solution may be used for this purpose?

M.D., Nebraska.

ANSWER.—There is no important danger from absorption when barium sulfate is injected into the urethra for x-ray visualization. Under certain circumstances of obstruction of the bladder neck, if this substance should be forced back into the bladder it might possibly be the basis for the formation of bladder stone and for this reason, if for no other, its use would be contraindicated.

There is no indication for using such a substance when there are many others specially devised for this purpose. A simple

and yet useful and practical medium for urethrography is ordinary 12.5 per cent aqueous solution of sodium iodide.

Dr. Flocks of the University of Iowa has suggested the use of 10 per cent sodium iodide in jelly as an ideal medium for urethrograms and has demonstrated its efficacy on many occasions. It is now generally considered the ideal medium for this purpose.

SALT WATER THERAPY

To the Editor:—I would greatly appreciate any information relative to the use of salt water therapy in different chronic conditions.

STERLING W. OBENOUR, M.D., Zanesville, Ohio.

ANSWER.—Much has been said and written on the value of salt water baths in health and in certain diseases, both acute and chronic. There is little objective evidence, however, to the scientific critic to indicate that the presence of salt adds much to the therapeutic effectiveness of baths. It is more probable that the temperature is the effective element rather than the presence of the salt.

More optimistic reports of the value of salt water baths and sea bathing have appeared in the literature principally from the continental and English spas. If a more favorable view is desired, the following references may be consulted:

Lendel, E.: Zur Einwirkung von Salzbädern auf den Kreislauf, *München. med. Wchnschr.* **81:** 1272 (Aug. 17) 1934.
Krauel, G.: Ueber Hauttemperaturen nach einem Solbade, *Deutsche med. Wchnschr.* **57:** 805 (May 8) 1931.
Harpuder, K.: Ueber Diffusionsvorgänge an der menschlichen Haut, *Ztschr. f. d. ges. exper. Med.* **76:** 724, 1931.
Messerle, N.: Das Verhalten des Blutzuckers nach Sol- und Süsswasserbädern, *Ztschr. f. d. ges. phys. Therap.* **35:** 57 (May 31) 1928.
Ley, R.: Der Einfluss von Solbädern auf den Wasserhaushalt, *Ztschr. f. d. ges. phys. Therap.* **35:** 47 (May 31) 1928.
McClellan, W. S.: Balneotherapy at Saratoga Springs, *Tr. American Clin. & Climatol. A.*, 1934.

DURATION OF RETENTION OF RUBBER TUBE IN BILE DUCT

To the Editor:—How long has a rubber tube been known to remain in the bile duct? I am not referring to a T tube or drain but to a rubber tube used for the purpose of reconstructing or inside tracking operations of the biliary duct channel, such as that used in the Mayo operation in choledochoduodenostomy to maintain patency. There are several references in the literature stating that these tubes have been kept in place for as long as four years.

P. A. CONSALES, M.D., Boston.

ANSWER.—The longest period so far as known that a tube has remained in the bile duct following a reconstructive operation for stricture was twelve years. This occurred in the case of a foreign surgeon. The interior of the tube became encrusted with bile pigment débris, which obstructed it. It was removed at the time several visiting surgeons from the United States were in attendance.

CONTRACTED PUPILS

To the Editor:—A single woman aged 42 noticed a few months ago that the sight of her left eye was affected. She is a school teacher. January 15 her vision for the left eye was fingers at 6 feet. The vision of the right eye was 20/10, no error. The pupils of each eye are small, almost pinpoint. There was a slight reaction when exposed to light, noticeable only at the pupillary margin. The puzzling feature of this case is that the pupil of each eye will not dilate under a strong solution of atropine applied every few hours for two days. A view of the fundus is impossible. The eye with poor vision is not inflamed. Tension is normal. No watering or secretion occurs. The vision has remained the same since January 15. Complete laboratory tests, including the Wassermann test and x-ray examination of the sinuses and lungs, have been made and found to be comparatively negative. Some scars in the lungs indicate an early tuberculous involvement, which has healed. A slight cloudiness of the left antrum, possibly imaginary, prompted an opening through the nasal passage, but the antrum was found to be free from infection. One or two teeth showed some infection and have been extracted. Have you any record of any eye with normal vision and free from inflammation the iris of which does not respond to atropine?

W. R. THOMPSON, M.D., Fort Worth, Texas.

ANSWER.—The description of the eye gives no information as to what might be ascertained by a slit lamp examination. If, with the slit lamp microscope, one sees old keratitic precipitates or pigment on the lens capsule, it would indicate that the pupils are small because of an old healed iridocyclitis with posterior synechiae. A thickened iris or one with sclerotic blood vessels might have a miotic pupil which does not dilate well with mydriatics even as strong as atropine. Following slit lamp examination an attempt to dilate the pupil with a subconjunctival injection of a mixture of cocaine 1 per cent, atropine 1 per cent and 1:1,000 solution of epinephrine should be made. One may use 1 per cent suprarenin bitartrate jelly twice daily. Either or both of these will sometimes dilate an iris bound down by posterior synechiae.

GASTRO-ENTERITIS AND WATER SUPPLY

To the Editor.—A city water supply was augmented by the water from a well which had been unused for several weeks. From six to eight hours after this, a large percentage of the users of the combined water were taken suddenly ill with vomiting and diarrhea. There was no fever. These symptoms lasted from a few hours to about a day. Biologic analysis a few days later showed the water from the well which had been idle to be contaminated with Bacillus coli and B. aerogenes. There was reason to think that the water might have contained extraneous inorganic material. Is it probable that the introduction of contaminated water into the supply would cause such prompt afebrile symptoms either from the organisms themselves or from possible derivative products? Is it the rule or even the rare exception that water thus contaminated would have such results? Would it not be more likely, if any symptoms were occasioned, that they would be accompanied by fever and would have a delayed onset? Your opinion together with references on this matter would be appreciated.

T. L. CHADBOURNE, M.D., Vinton, Iowa.

ANSWER.—The sudden introduction of sewage-polluted water into a pure water supply has on occasion resulted in gastro-enteritis with an incubation period of from eight to twelve hours. A number of days later typhoid or other enteric diseases of bacterial origin may appear (Jordan, E. O., and Irons, E. E.: *J. Infect. Dis.* **11:**21, 1912). The etiology of the initial gastro-enteritis is obscure. Although the presence of Bacillus coli is suggestive of fecal contamination of the well water, it is not possible to assay the potability of a water on this basis alone. Unless the water was so heavily contaminated as to approach sewage, it is unlikely that its introduction into the city supply would result in gastro-enteritis of such a short incubation period. Contamination with heavy metals is a possibility also. Certain natural waters of the acid peaty type, for example, that have been in contact with copper pipes may give rise to gastrointestinal symptoms. In the absence of sufficient information, it is impossible to say whether or not the introduction of the well water in question bore a relation to the outbreak of gastro-enteritis.

SAFETY OF DENTAL X-RAY EXPOSURES

To the Editor:—I am using the regular type of dental x-ray machine with 10 milliamperes. What would be the maximum amount of exposure that I can give a patient at the same area with safety?

PHILIP GREENBERG, M.D., Bronx, N. Y.

ANSWER.—A dental x-ray equipment giving 10 milliamperes was tested for output in roentgens. There was a filter of the bakelite case of the box enclosing the tube as well as the layer of oil surrounding it. The measured dose was 2 roentgens per second when the focal spot of the tube was about 7 inches from the skin of the face. The average exposure for a molar is ten seconds, so the dosage would be about 20 milliampere-seconds for a molar. About half that would suffice for an incisor. The maximum safe exposure over any given skin area with the dental equipment described under the conditions named would be 200 milliampere-seconds.

STERILIZATION OF BONE PLATES

To the Editor:—What is the proper method of sterilizing beef-bone plates and screws?

J. W. MCROBERTS, M.D., Sheboygan, Wis.

ANSWER.—There are only two methods: thermal and chemical. One group does not use plates but boils the pegs twenty minutes. Others put them in the autoclave for ten minutes. In the old days before chrome plated instruments were in general use there was danger of using chemicals because of corrosion; but that does not occur at present.

DIAGNOSIS OF PENILE ULCER—DUCREY VACCINE

To the Editor:—In the discussion of "Diagnosis of Penile Ulcer" (THE JOURNAL, July 16) reference was made to "dmelcos" and the difficulty in obtaining this European vaccine. The Ducrey vaccine for the diagnosis of chancroid is available in this country and is listed by the Lederle Laboratories, Inc., among their products. For the last two years the University of Georgia School of Medicine has distributed this "vaccine" to scores of medical institutions and physicians who have manifested an interest in its diagnostic value. Chancroidal bubo pus has been shown to be inferior to the vaccine in diagnosis (Greenblatt, R. B., and Sanderson, E. S.: Diagnostic Value of the Intradermal Chancroidal Test, *Arch. Dermat. & Syph.* **36:** 486 [Sept.] 1937; *Am. J. Clin. Path.* **7:** 193 [March] 1937). The vaccine may be made with moderate ease in any competent laboratory by employing the technic used at the University of Georgia School of Medicine (Sanderson, E. S., and Greenblatt, R. B.: *South. M. J.* **30:** 147 [Feb.] 1937). Ducrey vaccine made from strains of Ducrey bacillus of American origin has been shown to be the equal of European "dmelcos" as a diagnostic procedure (Greenblatt, R. B., and Sanderson, E. S.: *J. M. A. Georgia* **27:** 218 [June] 1938).

G. LOMBARD KELLY, M.D., Augusta, Ga.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, September 3, page 963.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination, Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An affiliate of the American Board of Surgery. New York, Oct. 21-22. Sec., Dr. Paul M. Wood, 745 Fifth Avenue, New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various large cities in the country about Oct. 1. *Oral.* St. Louis, Nov. 11-12. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: Written examinations will be held in various parts of the United States, Oct. 17 and Feb. 20. Application for the October examination must be received before Sept. 15 and for the February examination on or before Jan. 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada, Nov. 5. General examination for all candidates (Groups A and B) will be given in St. Louis, June. Applications must be filed not later than sixty days prior to date of examination. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: New York, Oct. 7, and Washington, D. C., Oct. 8. Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Memphis, Tenn., January. Applications for this examination must be filed with the Secretary on or before Oct. 15. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Washington, D. C., Oct. 7-8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Detroit, October 26; Rochester, N. Y., November 13; and Oklahoma City, November 15. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 28-30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlantic City, N. J., Sept. 15-18. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: New York, Jan. 13-15. Applications must be submitted not later than Oct. 1. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

District of Columbia July Report

Dr. George C. Ruhland, secretary, Commission on Licensure, reports the written examination held in Washington, July 11-12, 1938. The examination covered nine subjects and included sixty questions. An average of 75 per cent was required to pass. Twenty-four candidates were examined, all of whom passed. Eight physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine	(1935) (1936) 77.7, 84.2, (1937) 83.5, 85.2, 85.7, 85.7, 86.2, 86.5, 88.2		84.9,
Georgetown University School of Medicine	(1936) 80, (1937) 84, 85.3, 85.3, 86		79,
Howard University College of Medicine	(1937)		84
University of Illinois College of Medicine	(1935)		76.7
University of Minnesota Medical School	(1938)		81.5
Washington University School of Medicine	(1934)		77.7
University of Rochester School of Medicine	(1934)		81.8
University of Pennsylvania School of Medicine	(1933)		89.3
Medical College of Virginia	(1930) 83, (1937)		86.7

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists	(1932)	N. B. M. Ex.	
Georgetown University School of Medicine	(1935), (1936, 2)	N. B. M. Ex.	
School of Medicine of the Division of Biological Sciences	(1932), (1934)	N. B. M. Ex.	
Harvard University Medical School	(1927)	N. B. M. Ex.	
Tufts College Medical School	(1933)	N. B. M. Ex.	

Twenty-four physicians were licensed by reciprocity from January 24 through July 13. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine	(1915)		Colorado
George Washington University School of Medicine	(1930), (1933), (1934)	Maryland	
Georgetown Univ. School of Medicine	(1931) Penna. (1932) (1933), (1934, 3)	Maryland	Minnesota
Howard University College of Medicine	(1932)		Virginia
Indiana University School of Medicine	(1920)		Indiana
Johns Hopkins University School of Medicine	(1913) (1928)	Maryland	New York,
University of Maryland School of Medicine and College of Physicians and Surgeons	(1930) Maryland, (1938)		Texas
Boston University School of Medicine	(1916)		Mass.
Harvard University Medical School	(1929)		Maine
University of Michigan Medical School	(1934)		Michigan
Long Island College of Medicine	(1934)		Maryland
University and Bellevue Hospital Medical College	(1922)		New York
Temple University School of Medicine	(1917)		Penna.
University of Pennsylvania School of Medicine	(1928)		Louisiana
University of Wisconsin Medical School	(1934)		Wisconsin

The following physician was licensed by endorsement on July 13 by special act of Congress:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Universität Heidelberg Medizinische Fakultät	(1910)		Germany

Florida June Examination

Dr. William M. Rowlett, secretary, State Board of Medical Examiners, reports the examination held at Jacksonville, June 13-14, 1938. One hundred and twenty-three candidates were examined, ninety-seven of whom passed and twenty-six failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists	(1928)		78.9
Yale University School of Medicine	(1921)		75
George Washington University School of Medicine	(1936) (1938) 82.1		80.4,
Georgetown University School of Medicine	(1936)		82.2
Howard University College of Medicine	(1935)		81.7
Atlanta College of Physicians and Surgeons, Georgia	(1908) (1913) 75.9		82.5,
Emory University School of Medicine	(1923) (1934) 80.7, (1935) 81.1, (1938) 75.2, 77, 77.4, 77.8, 82.3, 82.7		75,
University of Georgia Medical Department	(1932)		82.8
University of Georgia School of Medicine	(1935) (1936) 77.6, (1937) 81.3		82.4,
College of Physicians and Surgeons of Chicago	(1908)		76.9
Northwestern University Medical School	(1918) (1936) 81.7, (1937) 84.5		80.6,
Rush Medical College	(1934) 82.8, (1937)		81
School of Medicine of the Division of Biological Sciences	(1931)		77.2
University of Illinois College of Medicine	(1915) (1927) 80.7, (1933) 80.3, (1937) 84.3		79.2,
State University of Iowa College of Medicine	(1937) (1938) 82.9		79.9,
University of Louisville School of Medicine	(1932) (1933) 79.4, (1936) 77.6		75.5,
Louisiana State University Medical Center	(1938)		83*
Tulane University of Louisiana School of Medicine	(1919) (1931) 77.7, (1934) 80.2, (1938) 79.3, 81.2, 82.1, 82.3, 89.7		82,
Johns Hopkins University School of Medicine	(1930)		80.7
Harvard University Medical School	(1935) 77.6,		87.3
Tufts College Medical School	(1930) 80.6, (1935)		84.9
University of Michigan Medical School	(1936)		80.5
St. Louis University School of Medicine	(1933) 78.6, (1936)		76.9
Creighton University School of Medicine	(1935)		77.5
Columbia University College of Physicians and Surgeons	(1925)		80.9
New York Homeopathic Medical College and Flower Hospital	(1914)		78.5
New York University College of Medicine	(1936)		84.5
University and Bellevue Hospital Medical College	(1924)		75.9
University of Rochester School of Medicine	(1935)		81.3
Duke University School of Medicine	(1935) 80.8, (1937)		79.3
Eclectic Medical College, Cincinnati	(1937)		75.9
Ohio State University College of Medicine	(1934)		79
University of Cincinnati College of Medicine	(1931) (1937) 78.2, 82, (1938) 82.1		79.6,
Western Reserve University School of Medicine	(1921)		77.3
Jefferson Medical College of Philadelphia	(1931) 78.8, (1937)		75.3
Temple University School of Medicine	(1933) (1938) 83.8, 84.5		82.7,
University of Pennsylvania School of Medicine	(1917)		77.3
University of Pittsburgh School of Medicine	(1933) (1934) 79.7, (1937) 84.7		85.9,
Medical College of the State of South Carolina	(1930)		80.5
Meharry Medical College	(1936)		80.4
University of Tennessee College of Medicine	(1927) (1937) 77.2, (1938) 76.2		82,
Vanderbilt University School of Medicine	(1937) 78.9, (1938) 82.6, 84.6		75.6,
University of Texas School of Medicine	(1927)		78.6
Medical College of Virginia	(1938)		75
University of Virginia Department of Medicine	(1936) 82.3, (1937) 82.3, (1938) 83.8		82.3,
Marquette University School of Medicine	(1938)		79.8
University of Manitoba Faculty of Medicine	(1932)		79
University of Toronto Faculty of Medicine	(1937)		84.6
McGill University Faculty of Medicine	(1924)		81.3

School	FAILED	Year Grad.	Per Cent
Emory University School of Medicine	(1929) (1938) 69.2, 71.3, 72.6		72.5,
University of Georgia School of Medicine	(1936)		66, 68.7
Chicago College of Medicine and Surgery	(1917)		62.7
Jenner Medical College, Chicago	(1910)		65

Loyola University School of Medicine	(1938)	69.7
University of Illinois College of Medicine	(1923)	65.3
University of Louisville School of Medicine	(1933)	73.5
Baltimore Medical College	(1905)	57.6
University of Michigan Medical School	(1931)	73.3
St. Louis University School of Medicine	(1926)	67.3
University of Nebraska College of Medicine	(1933)	71.7
Columbia University College of Physicians and Surgeons	(1904)	61.7
Eclectic Medical College, Cincinnati	(1921)	60.5
University of Oklahoma School of Medicine	(1937)	72.4
Jefferson Medical College of Philadelphia	(1908)	63
Temple University School of Medicine	(1913)	68.4
University of Pennsylvania School of Medicine	(1936)	73.7
University of Tennessee College of Medicine	(1933)	72.4, (1934) 72.8
University of Toronto Faculty of Medicine	(1912)	54.5, (1920) 73.2, (1926) 71.7

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.

Book Notices

The Radiology of Pulmonary Tuberculosis. By J. E. Bannen, M.B., Ch.B., D.M.R.E., Radiologist, Hull Corporation Hospitals and Tuberculosis Clinics. Fabrikoid. Price, $4.50. Pp. 156, with 39 illustrations. Baltimore: William Wood & Company, 1937.

This splendid piece of work is complete in every detail and yet very brief. Bannen begins his monograph with a discussion of the technic of radiography and a brief mention of the principles of tomography and kymography. In the second chapter the author discusses from an anatomic and radiologic standpoint the normal lung with its anomalies and variations. He also discusses the topographic anatomy of the lung and the diaphragm and mediastinum as they appear in the normal roentgenogram of the chest. With this as a foundation he devotes seven chapters to the interpretation of the roentgenogram of the chest, translating the various shadows seen in terms of the underlying pathologic condition, e. g. atelectasis, emphysema, bronchiectasis, exudative lesions, caseation, fibrosis, calcifications, cavitations. He also adapts the various shadows to the pathogenesis of tuberculosis and to the pathologic physiology, and the interpretation of the chest roentgenogram after bronchography and artificial collapse therapy. One chapter is devoted to the differential diagnosis of the x-ray shadows which simulate the shadows of the various types of pulmonary tuberculosis, such as pneumonia, bronchopneumonia, Hodgkin's disease, silicosis and passive congestion of the lung due to heart disease. The illustrations are reduced negative prints of the roentgenogram of the chest, diagrammatic sketches and photographs. The only criticism is that the book is rather brief for the beginner and leaves much to the knowledge of the general practitioner. This lack is compensated for by a fine list of references after each chapter. The value of the book as a contribution to the literature lies in the fact that it stimulates the general practitioner to learn to interpret his x-ray plates, leads him to understand the importance of the roentgenogram in the diagnosis and treatment of pathologic conditions of the chest and to appreciate the importance to treatment and prognosis of serial roentgenograms at three to six month intervals. This contribution also reveals the importance of stereoscopic plates for the first roentgenogram and also the value of oblique and lateral views. However, the cardinal effect of the monograph on the general practitioner is to stimulate more frequent use of the roentgenogram in the diagnosis of chest conditions, a form of stimulus which will do much for the early diagnosis of pulmonary tuberculosis.

Die Psychiatrie im Dienste der Wehrmacht. Von Adolf Heidenhain. Mit einem Vorwort von Professor Dr. J. Lange. Boards. Price, 2.80 marks. Pp. 53. Leipzig: Georg Thieme, 1938.

From an American point of view, perhaps, treatment of psychopathology should be the most important medical function in Germany today; but the most recent literature which has come out in psychiatry and psychology has dealt largely with the improvement of the thinking processes of the German people through sterilization and what is euphemistically known as race improvement. Since the problem of restoration of German morale seems to depend on rebuilding its armed forces, it is not surprising that the present volume, which deals with psychiatry in the service of rearmament, has appeared. What is surprising is the fact that it is only a small pamphlet, that it is not particularly scientific, that it is not deeply thought out and probably from the point of view of military surgeons and military psychiatrists is not particularly important. However, the author does acknowledge that it is only an introduction to the subject and not a complete survey. The problems of psychiatry in the army, as presented by Heidenhain, seem to be principally those which would confront the mental physician in dealing with large groups of individuals who have been torn from their homes, who are more or less segregated from females, and who are more or less unselected as to mental capacities. Feeblemindedness is barely touched on, the implication being that it is not important to the military. Although much of it is extremely interesting, presenting the author's observations of the recent recruit called to the colors in his country, the important feature that appears in this study is the fact that mental and nervous disease is not particularly significant, either because the age of onset of these diseases is above that of the recruits or because the chief mental problem observed in the old German army of homesickness has now been done away with, as recent recruits have been brought up in various camps from early childhood and assume cantonment life to be a normal life. Alcoholism is very important but, of course, as one would expect in such a young group, it is usually of an acute form, not chronic. There is no attempt made in this book to show how mental hygiene can be used in adjusting these individuals and very little insight is shown into secondary political psychiatric problems which naturally arise in such a dominant army and navy. There is a bibliography which is not as extensive as it could be, perhaps, but it does draw on some foreign sources. This little volume will probably be more of cultural and political interest to Americans, be they physicians or not, than of any particular medical importance.

General Relief Statistics for the Fifteen-Month Period January 1936 Through March 1937. Works Progress Administration, Harry L. Hopkins, Administrator. Corrington Gill, Assistant Administrator. Emerson Ross, Director, Division of Research, Statistics and Records. Prepared under the direction of T. E. Whiting. Paper. Pp. 57. Washington, D. C.: United States Government Printing Office, 1938.

The Social Security Board became responsible for the collection and publication of general relief statistics beginning in April 1937. This bulletin covers a period of fifteen months from January 1936 through March 1937, and the data supersede the figures for these months published previously in General Relief Statistics Bulletins issued by the FERA and for a time issued jointly by this agency and the Social Security Board. The figures presented cover the number of family and single person cases and the total number of persons receiving general relief, the amount of general relief extended to cases and the total obligations incurred for relief. The term "general relief" does not include wages paid for work done under the Works Program, loans or grants made by the Farm Security Administration, aid to veterans or old age assistance, aid to dependent children or aid to the blind. The term "case" as used denotes a family or single person. The estimated number of "cases" receiving general relief in the country at large rose to a winter peak of 1,723,000 in February 1937 and in the following month declined to 1,681,000. Between March 1936 and March 1937 the number of cases declined 16.4 per cent, whereas between January 1936 and January 1937 the number of cases on general relief declined 25.1 per cent. The changes in the number of cases receiving general relief during the fifteen month period covered by this bulletin were influenced by variations in works program employment, variations in seasonal needs, changes in private employment, availability of funds, and administrative policies of state and local relief administrations; the great diversity of financial and administrative policies contributed to differences from state to state in the extent to which general relief needs were met. During February 1936 public aid in the form of old age assistance, aid to dependent children and aid to the blind under the Social Security Board was inaugurated in a number of states, and the expansion of this program in subsequent months resulted in removing a large number of persons from the general relief rolls. The effect of private employment on general relief became especially evident after February 1936. However, the employ-

ment gains in the spring and summer of 1936 were somewhat offset by the seasonal decline in the automobile and coal mining industries during the summer, although private employment gained momentum after August 1936. The longshoremen's strike on the Pacific Coast and strikes in the automobile industries in 1937 caused a temporary rise in the number of cases receiving general relief in the areas affected. In January 1936 it is estimated that about 7,211,000 persons, or 5.6 per cent of the total population of the country, received general relief. In March 1937 this number was reduced to 5,333,000, a decline of 26 per cent. The amount of general relief issued was $47,915,000 in January 1936 and $39,679,000 in March 1937, whereas the amount of general relief extended declined only 17.2 per cent between January 1936 and March 1937. The drop in the number of cases receiving general relief amounted to 24.1 per cent, indicating that during this period there was an increase in the average amount per case receiving general relief. The total amount extended to cases for general relief during the period January 1936 through March 1937 was $553,453,000. It was impossible to obtain complete reports for all the states for this fifteen month period, and it was necessary therefore to prepare estimated totals. All estimates for the continental United States for this fifteen month period are therefore subject to revision on the receipt of more adequate data. The bulletin states that the estimates given are substantially correct and that any further revisions will be relatively small. A great part of this bulletin is a tabulation of the data referred to by states and by month. General and emergency relief data for the preceding three year period may be found in greater detail in the Statistical Summary of Emergency Relief Activities, published by the FERA, while figures for the period beginning with April 1937 may be obtained from publications of the Social Security Board.

O liquido cefalo-raquidiano em clinica. Pelo Oswaldo Lange, 3.° assistente da Clinica neurologica da Faculdade de medicina da Universidade de São Paulo. Prefacio do Prof. A. de Almeida Prado. Paper. Price, 20 milreis. Pp. 200, with 27 illustrations. São Paulo, Cayeiras & Rio de Janeiro: Companhia Melhoramentos de São Paulo, 1937.

The author discusses the physiology and anatomy of the brain and spinal cord, with a discussion on the origin of the cerebrospinal fluid. There are twelve chapters, each dealing with a clinical entity. These clinical conditions are illustrated by charts and by reproductions of photographs. The most valuable section is the one which deals with the manometric pressure and the examination of the spinal fluid in various types of spinal blockade. There is little information on the subject of cerebrospinal fluid contained in this book which is not already known in the American literature. There are occasional references to Cushing and his associates, but as a rule the references at the bottom of the page refer to foreign literature.

Food and Physical Fitness. By E. W. H. Cruickshank, M.D., D.Sc. M.R.C.P., Regius Professor of Physiology, The University of Aberdeen. Foreword by Sir John B. Orr, D.S.O., M.D., D.Sc., Director of the Rowett Institute, Aberdeen. Cloth. Price, $2. Pp. 148. Baltimore: William Wood & Company, 1938.

This book is based on a series of public lectures on nutrition at the University of Aberdeen and it is directed to the general public. While written interestingly, it contains a few points which careful editing would eliminate or correct and thereby add to the value of the book. On page 21 reference is made to the work of "Chittenden in Boston." Boston and New Haven are related in more ways than one, but they are still distinguishable. On page 29, cheese is discussed without reference to the great differences in composition of various kinds of cheese. On page 31 appears the interesting assertion that "uric acid is not entirely a waste product; a certain amount is excreted by the kidneys, but some is reabsorbed by them in order to keep the uric acid content of the blood at its physiological level." In the chapter on minerals "Iron" appears as a heading on page 55 and again on page 60. There is further need for improvement in the headings of the chapter on vitamins and dietary deficiency diseases. On page 90 "Vitamin E" appears as a primary heading and "Vitamin Standards" as a subheading. On page 92 the unit of vitamin C is stated as "the vitamin activity of 0.05 cc. of ascorbic acid." Obviously this should be "0.05 mg." of the pure crystalline ascorbic acid. On page 93 there is a footnote to a table on the vitamin content of foods which erroneously states that vitamins A and D are in international units and the others (vitamins B_1, C and G) in Steenbock units. There is one really important criticism and that with regard to the section on the effect of pasteurization on milk. This section now reads as though the heat treatment of milk is of questionable value which, of course, it is not. Thus the author lists six things which happen to milk when it is boiled, namely the destruction of lactic acid bacilli, the inactivation of enzymes, the loss of vitamins, the loss of part of the iodine, a slight diminution of the lime salts due to the rendering insoluble of a small amount of calcium which adheres to the side of the pan in which the milk is boiled and, finally, the denaturation of proteins so that "the casein is no longer the natural protein as found originally in the milk." Contrast this type of statement, which is intended for the general public, with two statements issued by the Council on Foods relative to the pasteurization of milk: "The public should demand pasteurized milk for drinking and the use of pasteurized milk in milk products. The dairy trade should universally adopt pasteurization in the interest of public health." It has also been stated that "in the opinion of the Council, all milk used for infant feeding should be boiled." There should be no confusing of the issue in the public's mind and, in this respect, the book falls short of its purpose.

Fearfully and Wonderfully Made: The Human Organism in the Light of Modern Science. By Renée von Eulenburg-Wiener. Cloth. Price, $3.50. Pp. 472, with 18 illustrations. New York: Macmillan Company, 1938.

This book contains an extraordinary amount of material, fairly well digested and reasonably accurate. It is not a book for the serious student but should be valuable as a popular presentation. It attempts to present factual detail about human anatomy and physiology in a manner understandable to the layman. In this it is probably successful. However, the author rides certain hobbies, such as the importance of optical isomerism and the philosophical implications of the quantum theory, to an absurd degree. For this defect the publishers are perhaps as much to blame as the author, in not having obtained competent criticism. It will be worth while to list a random sample of errors in fact. Page 4: "The chemist is unable to form [organic] compounds in such a manner that they will exhibit the property of optical rotation." Page 70: "Chlorine is more or less equally distributed between the cells and the surrounding fluid . . . of the body." As a matter of fact it is more than likely that most body cells contain no chloride whatever. Page 85: "The greatest amount of work done by the heart is expended in overcoming resistance in the circulatory system; only a small amount of the total energy utilized determines the rate of the blood flow." The second clause is incorrect if the first is true, as it is. Page 88: "The elasticity of the arterial vessels is of great importance. It is partly due to this elasticity that the pressure of the blood decreases as the blood enters smaller and smaller vessels. Decreased elasticity of the arterial walls is one of the factors which brings about increased blood pressure." The first sentence is obviously true, the second is absolutely incorrect, and the third is open to great argument. These examples are among many more in the same category.

With regard to the more definitely philosophical aspects of the work it can be said that the general principle is the application of modern non-materialistic physical ideology to biology. There is a good deal of loose reference to such ideas as for example that an increase in entropy represents senescence and death, and that "living substance like all matter is ultimately resolvable into sources of radiant energy and therefore may be considered but another form of radiant energy." The latter assertion is objectionable if for no other reason than because it suggests "another form" of energy in living from those in nonliving systems. The author (p. 446) makes the gratuitous assertion that "biology holding to the materialistic explanation of life has to restrict itself to isolated processes in the elucidation of living phenomena." If this were true, of course, the author would be right in her further remarks about its inadequacy. But such a restriction is unnecessary and no mechanist would allow it. The author has set up her own inadequate straw man to knock down. Another statement requiring con-

troversion is that "the uncertainty principle [of Heisenberg] rules in the biological sciences to a still greater extent [than in the physical]." There is not the slighest evidence that this principle is of any special consequence in biologic activity. Certain noted physicists have indicated in popular books that they imagine the "uncertainty principle" might solve the enigma of the freedom of the will and other things physicists in general know nothing about, but it hardly seems appropriate to attach positive significance to a physicist's biologic imaginings.

Youth Tell Their Story. By Howard M. Bell. A Study of the Conditions and Attitudes of Young People in Maryland Between the Ages of 16 and 24. Conducted for the American Youth Commission. Paper. Price, $1.50. Pp. 273, with illustrations. Washington, D. C.: American Council on Education, 1938.

Once again the obvious is proved by an elaborate investigation. The American Youth Commission and the American Council on Education have discovered and assembled detailed evidence to prove that in the lower income classes the children must help support the family, that they receive less medical and dental care and that they live in houses with fewer conveniences. The unemployed youth desire a home and family, but marriage is delayed. They left school younger than those in the higher income classes, and 40 per cent of those that left did so for economic reasons, while they still wish more education. They get poorer jobs. They do not attend church. They are looking to the government for help but want work rather than relief. Only 55 per cent of them are sufficiently interested in politics to vote. All this is stated statistically and illustrated by diagrams on the basis of questionnaires circulated in the city of Baltimore and held to be representative of the United States.

The Diet Book for Doctor, Patient and Housewife with Specimen Menus for One Week and Recipes. By Marguerite Requa Rea (Mrs. Alec L. Rea). With a foreword by Sir James Purves-Stewart, K.C.M.G., C.B., M.D., Physician to Westminster Hospital. Third edition. Cloth. Price, $2.25. Pp. 255. New York & London: Oxford University Press, 1937.

This book has been prepared primarily for the housewife and cook to enable them more adequately to prepare foods for the sick. In the present edition, additional dietaries suitable for maladies not contained in the previous editions have been included. Among these are the ketogenic diet and diets for nephritis. The first portion of the book outlines the meals to be employed in various conditions, while the second section is devoted to recipes and tables.

The value of the book for those in this country is limited by the inclusion in the meals of certain products not available. Trade preparations are liberally employed. Even with these limitations, the material will find a field of usefulness for those who must prepare food for the sick and convalescent. The physician may also find information of value to aid him in the planning of certain dietaries.

Medical Service in Industry and Workmen's Compensation Laws. Prepared by M. N. Newquist, A.B., B.Sc., M.D. Paper. Pp. 70, with 11 illustrations. Chicago: American College of Surgeons, 1938.

The natural interest of the American College of Surgeons in the treatment of industrial injuries has led to a study of industrial medicine, the organization and functions of industrial medical and surgical service, and workmen's compensation, all of which are covered in this report. The position is consistently maintained that such service should be confined to plant conditions and that, "if for no other reason than a sense of fair competition, industry should go no further in the actual treatment of non industrial injuries and illnesses than to give reasonable first aid and advice to those on duty." This leaves a wide and valuable field for medical activity in plant sanitation, physical examinations, safety measures and, in short, guarding against all conditions within the plant that may prove harmful to health. Statistical studies of the extent of medical service in industry and its effect on accidents and disease are presented. There is an excellent summary of the history and essential features of workmen's compensation laws and insurance systems in industry. The report is a compact presentation of information of value to any one interested in industrial medicine.

Baby's Point of View: The Psychology of Early Babyhood. By E. Joyce Partridge, F.R.C.S., L.R.C.P. Cloth. Price, $1. Pp. 94. New York: Oxford University Press, 1937.

Here is an attempt to explain behavior problems in childhood and neurotic conditions of adulthood by showing that the baby has a good deal of understanding at the early age of 2 to 3 weeks and that any drastic upheaval in its life at so early an age may be the basis for neurotic tendencies later in life. It is recommended that the mothers use their maternal instinct and intuition in caring for the infant rather than the rules of inflexible regularity of feeding and sleeping. In other words, "mothering" is advocated to prevent the child from becoming hysterical because of fear and crying. Breast feeding and the closeness of the mother, it is stated, keep the baby from feeling unsafe. This book with its new point of view will be found interesting to the physician as well as to the mother and nurse.

Intercity Differences in Costs of Living in March, 1935, 59 Cities. By Margaret Loomis Stecker. Works Progress Administration, Division of Social Research, Research Monograph XII. Paper. Pp. 216. Washington, D. C.: United States Government Printing Office, 1937.

The purpose of this study was to determine the costs of living in fifty-nine separate cities, first at a "basic maintenance level" and second at an "emergency level." The costs of living are determined by the retail prices of the goods and services essential to maintaining these levels. The family was assumed to consist of the father, mother, a boy aged 13 and a girl aged 8, and the figures to apply to March 1935. At that time it was determined that the average expenditure required in the fifty-nine cities to procure the "maintenance level" would be $1,261 and the "emergency level" $903. As might be expected, the lowest cost was found in the South Central states, but the closest correlation was in the increase of cost according to the size of the cities. The average cost for medical care was $52.32 a year. This medical care is made up not only of the personal services of physicians, dentists, nurses and hospitals but also of a list of drugs and appliances purchased by the patients. There might easily be some question as to these drugs and appliances.

The American Illustrated Medical Dictionary: A Complete Dictionary of the Terms Used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Nursing, Veterinary Science, Biology, Medical Biography, Etc., with the Pronunciation, Derivation, and Definition. By W. A. Newman Dorland, A.M., M.D., F.A.C.S., Lieut.-Colonel, M. R. C., U. S. Army. With the collaboration of E. C. L. Miller, M.D. Eighteenth edition. Fabrikoid. Price, $7; Thumb indexed, $7.50. Pp. 1,607, with 942 illustrations. Philadelphia & London: W. B. Saunders Company, 1938.

New terms appear in medical literature these days with astonishing rapidity. In the present edition of this well known dictionary, 3,000 new words have been defined. As a result the text is increased by more than sixty pages. The largest number of revisions and additions appear in the fields of endocrinology, immunology, pathology and biopsychology. More than 100 new tests are described. In the development of this dictionary, the editorial department of the American Medical Association cooperates, bringing the choice of terms into accord with the style book of the American Medical Association Press. An interesting feature of the dictionary is the portraits of distinguished investigators, together with brief biographic notes.

Major Endocrine Disorders. By S. Levy Simpson, M.A., M.D., M.R.C.P., Physician, Willesden General Hospital, London. Foreword by Sir Walter Langdon-Brown, M.A., M.D., F.R.C.P. Cloth. Price, 10s. 6d. Pp. 184, with 21 illustrations. London: John Bale Medical Publications Ltd., 1938.

Practitioners of medicine should welcome this authoritatively written, terse and practical summary of endocrinology. It is a precise survey of modern endocrinology that will be invaluable for purposes of orientation. While the author makes no pretense of writing a complete textbook on the subject, he has succeeded in presenting an unusual amount of well correlated data in a most lucid manner. Useless and confusing theoretical detail has been omitted from the book and the work reflects the author's rich practical and scientific background. The major endocrine syndromes of the thyroid, parathyroid, pituitary, adrenals, gonads and pancreas are discussed with masterful brevity. The work merits a place in the library of every practicing physician.

A Prairie Doctor of the Eighties: Some Personal Recollections and Some Early Medical and Social History of a Prairie State. By Francis A. Long, M.D. With two chapters on "The Prairie Doctor's Wife." By Maggie E. Long. Cloth. Price, $2.75. Pp. 223, with 34 illustrations. Norfolk, Nebraska: Huse Publishing Company, 1937.

Here Dr. Francis A. Long, for many years editor of the *Nebraska State Medical Journal,* presents the story of his career in medicine, which includes as well the early days of development of the state of Nebraska. The work is a straightforward account with little literary elaboration but one which is certain to be of interest to every one who knew of Dr. Long and his work in Nebraska. Two additional chapters by Mrs. Long reveal the attitudes and interests of the doctor's wife.

The Psychology of Speech. By Jon Eisenson. Cloth. Price, $2.25. Pp. 280, with 5 illustrations. New York: F. S. Crofts & Co., 1938.

After an introduction which considers the nature and origin of speech, its psychology and development, the author concerns himself with deviations in speech resulting from disorders in personality and, finally, with the speaker-audience relationship. The work seems to be based largely on earlier rather than more modern psychology. It presents nevertheless a concise consideration of that element of human conduct which most certainly distinguishes man from the animal.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Failure to Discover Fracture of Hip.—The plaintiffs, husband and wife, were in an automobile accident near Springfield, Ill., Aug. 9, 1933, and the wife was severely injured. She was taken to a hospital at Springfield and the defendant physicians were called to attend her. They found the patient in an unconscious condition and their examination disclosed a skull fracture extending from the frontal bone almost to the base of the skull. The patient remained unconscious for four or five days and her head injury was of such a serious nature that her life was despaired of. She remained in the hospital for about a month, during which time she gave many indications that she was suffering pain in her right hip but apparently no examination of the hip was made. On September 7 she was returned to her home in Kansas City by ambulance and by train, at which time the defendants' connection with the case terminated. Subsequently another physician observed that the wife's right leg was shorter than her left and a roentgenogram disclosed an unimpacted fracture of the neck of the right femur. A Whitman reconstruction operation was successfully performed but the right leg remained permanently short. The plaintiffs then sued the defendants, alleging malpractice. At the conclusion of the plaintiffs' evidence, the United States district court for the southern district of Illinois, southern division, directed the jury to return a verdict for the defendants and judgment was entered thereon. The plaintiffs then appealed to the United States circuit court of appeals, seventh circuit.

The district court directed the verdict for the defendants on the theory that the first duty of the physicians was to save the patient's life, if possible, and that even though they might have been negligent in not discovering the condition of the hip, yet they could not be held for damages unless the evidence showed that they could have safely examined and cared for the injured hip without endangering her life while she was undergoing treatment for the serious condition of her head. With this theory, the circuit court of appeals found itself in disagreement. The error in the theory was that it placed on the plaintiffs the burden, in the first instance, of proving that the patient was in a fit condition to have her hip examined and cared for without endangering her life. This placed on the plaintiffs a greater burden than the law warrants. Conceding that a prima facie case of negligence had been established by the plaintiffs, the burden was on the physicians, if they desired to avail themselves of that defense, to prove that the patient's condition was such that examination or treatment of her hip would have endangered her life. Aside from the injury to the patient's head there was no doubt that the plaintiffs established a prima facie case of negligence, with proximately resulting damages. It may be conceded, the court said, that the head injury prevented an examination and treatment of the hip sooner than five days after the injury, for the patient was unconscious during that time. The record disclosed, however, that the patient was in a condition to undergo an examination of her hip when she regained consciousness.

The physicians owed the patient the duty of making such examination and giving her such treatment as her physical condition and the skill of their profession in that community warranted. They did nothing so far as the injury to her hip was concerned in the way either of curative or of palliative measures. It was fairly inferable from the record, the court said, that where there is a fracture of the femur, which is not impacted, there should be an apposition of the broken ends of the bone as soon as possible, if by so doing the patient's life is not endangered. That injury proximately resulted to the patient from the physicians' negligence seemed to the court to be clear. The judgment of the district court was therefore reversed, and the cause remanded with instructions to grant a new trial.—*Weintraub v. Rosen, 93 F. (2d) 544.*

Workmen's Compensation Acts: "Any and All Occupational Diseases" Construed.—The claimant sold tickets in a booth in the street outside the lobby of a moving picture theater. This booth was heated by an electric heater which the claimant could turn on or off as she wished. The alternate heat and cold to which she was subjected, she claimed, caused blotches to appear on her legs and caused her feet to become numb and weak. She complained about this condition to her employer and he sent her to a physician. On the way to the physician's office she fell and fractured her left ankle, the fall being attributed to the weakness of her feet. The industrial board awarded compensation, finding that her injuries were accidental injuries that arose out of and in the course of her employment and that the disease from which she suffered was an occupational disease compensable under the workmen's compensation act. The supreme court, appellate division, New York, affirmed the award (297 N. Y. S. 960) and the employer and its insurance carrier appealed to the Court of Appeals of New York.

The workmen's compensation act of New York includes as accidents certain named occupational diseases and then follows with a clause providing compensation for "any and all occupational diseases." It was conceded that the claimant was not suffering from any occupational disease specifically named in the act. She claimed, however, that her condition was included in the general language "any and all occupational diseases." But, said the court, the wording of the act clearly indicates that only "occupational diseases" are compensable, not all diseases contracted during the course of employment. The act does not define the term "occupational diseases," but it indicates more clearly than by definition what is meant by enumerating certain diseases, linking each with the process used by the employee by which the disease is caused, such as lead poisoning contracted in a process involving the use of or direct contact with lead. Every such disease is thereby required to be actually caused in the course of the employment and from the particular work the employee is performing. Certain sections of the act refer to occupational diseases as those due to the nature of the employment and contracted therein and expressly limit compensation to those diseases. Thus an occupational disease is one which results from the nature of the employment, and by nature is meant not those conditions brought about by the failure of the employer to furnish a safe place to work but conditions to which all employees of a class are subject and which produce the disease as a natural incident of a particular occupation and attach to that occupation a hazard which distinguishes it from the usual run of occupations. Compensation is restricted, there-

fore, to disease resulting from the ordinary and generally recognized risks incident to a particular employment and usually from working therein over a somewhat extended period. Such a disease is not the equivalent of a disease resulting from the general risks and hazards common to every individual regardless of the employment in which he is engaged.

In the present case the claimant handled cash and theater tickets and it was obvious to the court that this work in and of itself could not have caused the leg injury or disease. The disease which befell her, therefore, was caused not by the nature of her employment but by the failure of her employer to furnish her with a proper and safe place in which to work. There being no evidence whatever to sustain the finding that the claimant contracted an occupational disease in the course of her employment, the court concluded that the award could not be sustained on that ground.

The court, however, thought that the award could be sustained on the ground of accidental injury arising out of and in the course of employment. The fall occurred while the claimant, pursuant to the directions of her employer, was on her way to the physician. The fall was the result of weakness of the claimant's feet which was caused, not by an internal disorder, disease or illness having no connection with her employment, but by the conditions of her employment. The order awarding compensation was therefore affirmed.—*Goldberg v. 954 Marcy Corporation (N. Y.), 12 N. E. (2d) 311.*

Accident Insurance: Diabetes, and Death from Septicemia Following a Burn.—The defendant promised to pay the plaintiff, as beneficiary, a certain amount if the insured lost his life as the result of bodily injuries "caused directly and independently of all other causes by violent and accidental means." Among the risks excluded was death "caused wholly or partly, directly or indirectly, by disease or bodily or mental infirmity or medical or surgical treatment therefore." The insured had an ingrown toenail which was partly removed by a chiropodist. In an effort to heal the toe, the insured exposed his foot to the rays of a heat lamp, which he had been in the habit of using for therapeutic purposes. On this occasion he fell asleep and the exposure continued for a much longer time than intended, causing a severe burn on the instep. A blister developed, which subsequently broke, resulting in an open and visible wound, and septic infection set in. The leg was amputated, but the insured died of streptococcic septicemia. For three years prior to his death, the insured had suffered from diabetes mellitus. The insurance company repudiated liability on the ground that the death of the insured, if not due solely to the diabetes, was at least caused primarily by it and not by accidental injury independently of all other causes. The trial court gave judgment for the plaintiff, and the company appealed to the Supreme Court of Pennsylvania.

The trial court found as facts that the diabetes of the insured was kept under control by diet and insulin and that it did not render him more liable to a burn or to infection, nor did it in any way interfere with their treatment. Had the death resulted from the combination of the injury and the diabetes, said the Supreme Court, then, even though the injury were the proximate and the diabetes merely the remote cause, there would be no liability under the policy. In view, however, of the trial court's findings that the diabetes in no way contributed to the death of the insured and that he probably would have died of the injury alone, this defense was not available to the company. There was no merit, the court continued, in the defendant's contention that the death was not caused by "violent and accidental means." The term "violent" signifies merely that a physical force, however slight, is efficient in producing a harmful result. Here the impact of the heat rays blistered and ultimately broke the tissues of the foot. In addition to being "violent," the means were also "accidental." A means is not accidental when employed intentionally, even though it produces an unintended result. But if, in the act which precedes the injury, something unforeseen, unexpected, unusual occurs, which produces the injury, the injury has resulted through accidental means. Here the means were employed intentionally only up to the time when the insured fell asleep. He did not compose himself to sleep; the falling asleep was an accident. Thereafter, the exposure of his foot to the heat was unintentional and involuntary and the means which produced the injury thus became "accidental."

The clause of the policy excluding liability for injury caused by medical treatment for bodily infirmity did not relieve the company from liability, the court continued. While the application of the rays undoubtedly was for therapeutic purposes and therefore constituted "medical treatment," it was not for "bodily infirmity." The latter term in insurance policies, the court pointed out, has uniformly been construed to mean a condition of a settled and substantial character materially impairing the bodily processes, and not to cover minor physical defects and ailments which are frequent incidents of life, speedily forgotten, and not affecting the general soundness and healthfulness of the system. Even a dormant duodenal ulcer has been held not to be a disease or bodily infirmity within the meaning of those terms in a policy. *Silverstein* v. *Metropolitan Life Insurance Co.*, 254 N. Y. 81, 171 N. E. 914. The same has been ruled in regard to burns about the ankles, leaving scar tissue, *McClure* v. *World Ins. Co.*, 126 Neb. 676, 254 N. W. 393; and to intestinal adhesions resulting from a herniotomy. *Druhl* v. *Equitable Life Assurance Society*, 56 N. D. 517, 218 N. W. 220, 60 A. L. R. 962. An ingrown toenail, said the court in this case, no more constitutes "bodily infirmity" than would an impacted tooth. The judgment of the trial court for the plaintiff was affirmed.—*Arnstein v. Metropolitan Life Ins. Co. (Pa.), 196 A. 491.*

Society Proceedings

COMING MEETINGS

Academy of Physical Medicine, Washington, D. C., Oct. 24-26. Dr. Herman A. Osgood, 144 Commonwealth Ave., Boston, Secretary.
American Academy of Ophthalmology and Oto-Laryngology, Washington, D. C., Oct. 9-14. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.
American Association for the Study of Goiter, Washington, D. C., Sept. 12-14. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.
American Association of Obstetricians, Gynecologists and Abdominal Surgeons, White Sulphur Springs, W. Va., Sept. 22-24. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
American Association of Railway Surgeons, Chicago, Sept. 19-21. Dr. Daniel B. Moss, 547 W. Jackson Blvd., Chicago, Secretary.
American College of Surgeons, New York, Oct. 17-21. Dr. George W. Crile, 40 East Erie Street, Chicago, Chairman, Board of Regents.
American Congress of Physical Therapy, Chicago, Sept. 12-15. Dr. Richard Kovacs, 1100 Park Ave., New York, Secretary.
American Hospital Association, Dallas, Texas., Sept. 26-30. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
American Public Health Association, Kansas City, Mo., Oct. 25-28. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
American Roentgen Ray Society, Atlantic City, N. J., Sept. 20-23. Dr. Carleton B. Peirce, University Hospital, Ann Arbor, Mich., Secretary.
Associated Anesthetists of the United States and Canada, New York, Oct. 17-21. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary General.
Association of Military Surgeons of the United States, Rochester, Minn., Oct. 13-15. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.
Central Association of Obstetricians and Gynecologists, Minneapolis, Oct. 6-8. Dr. William F. Mengert, University Hospitals, Iowa City, Secretary.
Central Society for Clinical Research, Chicago, Nov. 4-5. Dr. Lawrence D. Thompson, 4932 Maryland Ave., St. Louis, Secretary.
Clinical Orthopedic Society, Nashville, Tenn., and Birmingham, Ala., Oct. 7-8. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.
Delaware, Medical Society of, Dover, Oct. 10-12. Dr. Allan V. Gilliland, Smyrna, Secretary.
Indiana State Medical Association, Indianapolis, Oct. 4-6. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
Kentucky State Medical Association, Louisville, Oct. 3-6. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
Michigan State Medical Society, Detroit, Sept. 19-22. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.
Mississippi Valley Medical Society, Hannibal, Mo., Sept. 28-30. Dr. Harold Swanberg, 510 Main St., Quincy, Ill., Secretary.
Nevada State Medical Association, Reno, Sept. 23-24. Dr. Horace J. Brown, 120 N. Virginia St., Reno, Secretary.
Omaha Mid-West Clinical Society, Omaha, Oct. 24-28. Dr. J. D. McCarthy, 107 South 17th St., Omaha, Secretary.
Pacific Association of Railway Surgeons, Los Angeles, Oct. 7-8. Dr. W. T. Cummins, Southern Pacific General Hospital, San Francisco, Secretary.
Pennsylvania, Medical Society of the State of, Scranton, Oct. 3-6. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
Southwestern Medical Association, El Paso, Texas, Nov. 3-5. Dr. Orville E. Egbert, 116 Mills St., El Paso, Texas, Secretary.
Vermont State Medical Society, Burlington, Oct. 6-7. Dr. B. F. Cook, 154 Bellevue Ave., Rutland, Secretary.
Virginia, Medical Society of, Danville, Oct. 4-6. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.
Wisconsin, State Medical Society of, Milwaukee, Sept. 14-16. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

16: 1-132 (July) 1938

Dissecting Aneurysm: Study of Six Recent Cases. M. Hamburger Jr. and E. B. Ferris Jr., Cincinnati.—p. 1.

Vectorcardiogram. F. N. Wilson and F. D. Johnston, Ann Arbor, Mich. —p. 14.

Measurement of Circulation Times and Agents Used in Their Determination. S. Baer and B. G. Slipakoff, Philadelphia.—p. 29.

Calcareous Aortic Valve Stenosis, with Particular Reference to Its Etiology. G. Lesnick and M. J. Schlesinger, Boston.—p. 43.

The Lag-Screen Belt Electrocardiogram. G. Asher and F. Hoecker, Kansas City, Mo.—p. 51.

Observations on Passive Vascular Exercise and Other Forms of Treatment of Peripheral Vascular Disease. W. B. Kountz and J. R. Smith, St. Louis.—p. 55.

Blood Pressure Response to Epinephrine Administered Intravenously to Subjects with Normal Blood Pressure and to Patients with Essential Hypertension. T. J. Fatherree and E. A. Hines Jr., Rochester, Minn. —p. 66.

Stethograph. M. L. Lockhart, Ossining, N. Y.—p. 72.

*Heart Sounds in Normal Children. Margaret Harper McKee, Irvington, N. Y.—p. 79.

*Heart Sounds and Murmurs in Children with Rheumatic Heart Disease. Margaret Harper McKee, Irvington, N. Y.—p. 88.

Heart Sounds in Normal Children.—In order to establish normal standards, McKee made stethographic records of the hearts of 105 apparently healthy school children. Four distinct sounds invariably accompanied each heart beat, namely the first, the second, the "physiologic" third and a supposedly auricular sound, which preceded the first. The last two were low in pitch and usually of little intensity and therefore are generally inaudible. The first or second sounds, or both, are frequently split. Sinus arrhythmia was always present. The differences in the intersphygmic intervals depend on the time elapsing between the third sound and the following auricular sound. The intensities of the various sounds depend on where the microphone is placed and vary greatly with changes in the cardiac rate. At the apex a moderately low-pitched, usually faint systolic murmur was present in all instances, which suggests that too much significance should not be attached to such murmurs when they are barely audible with the stethoscope. The investigation indicates that splitting of the first or second heart sound and the presence of a third sound have no pathologic significance.

Murmurs in Rheumatic Heart Disease.—McKee analyzed the stethograms of 130 children between the ages of 7 and 16 years, all of whom had unequivocal histories of polyarthritis, chorea or carditis of a rheumatic type. Stethograms of children with quiescent rheumatic heart disease show the same degree of sinus arrhythmia as those of normal children. In carditis this arrhythmia may disappear. Gallop rhythm may be due, at least in some cases, to tachycardia, accentuation of the third heart sound, and lessening of the intensity of the first heart sound. Of 119 children with organic heart disease 19 per cent had abnormally loud second sounds at the pulmonic area. Otherwise the heart sounds were not outside the normal range. The apical systolic murmurs which were present in cases of mild cardiac damage appeared similar to those found in normal records except for increased intensity. With more advanced cardiac disease these murmurs became slightly higher pitched. The louder, longer apical diastolic murmurs occur in cases in which the cardiac disease is relatively severe. However, when the disease is not so far advanced the short, early, faint diastolic murmur may come and go from time to time during periods when the disease is apparently inactive. Stethograms of these children show sometimes a murmur and sometimes a third heart sound. The murmur may even come and go with respiration. There are all gradations from a simple clearcut third heart sound to an obvious long diastolic rumble. The term murmur has been used to designate any series of waves composed of more than three vibrations. Inconstant, faint, early diastolic murmurs may be due to slight relative stenosis of the mitral valve caused by cardiectasis without enlargement of the mitral orifice.

American Journal of Medical Sciences, Philadelphia

196: 1-152 (July) 1938

Evolution of Parenchymal Lung Lesions in Rheumatic Fever and Their Relationship to Mitral Stenosis and Passive Congestion. B. A. Gouley, Philadelphia.—p. 1.

Role of Mitral Stenosis and of Postrheumatic Pulmonary Fibrosis in Evolution of Chronic Rheumatic Heart Disease. B. A. Gouley, Philadelphia.—p. 11.

Site of Action of Renal Pressor Substance. A. Merrill, Atlanta, Ga.; J. R. Williams Jr. and T. R. Harrison, Nashville, Tenn.—p. 18.

Insensible Loss of Water in Diabetes Insipidus. A. H. Bryan and Mary Ann Metzger, Chicago.—p. 23.

*Observations on Continued Use of Protamine Zinc Insulin in Patients with Severe Diabetes Mellitus. Elaine P. Ralli, H. D. Fein and F. J. Lovelock, New York.—p. 28.

Changes in Glucose Tolerance Test Occurring During and After Insulin Shock Therapy for Schizophrenia. H. Freed, with assistance of Eleanor Fortunato, S. DeW. Ludlum and E. A. Strecker, Philadelphia. —p. 36.

Effect of Benzedrine on Ciliary Movement. E. M. Boyd, Kingston, Ont. —p. 44.

*Antidotal Action of Picrotoxin in Acute Intoxication by Barbiturates. E. A. Rovenstine, New York.—p. 46.

Prothrombin Deficiency and Bleeding Tendency in Obstructive Jaundice and in Biliary Fistula: Effect of Feeding Bile and Alfalfa (Vitamin K). K. M. Brinkhous, H. P. Smith and E. D. Warner, Iowa City.—p. 50.

Combined System Disease Without Obvious Evidence of Pernicious (Macrocytic) Anemia: Report of Eight Cases; One Autopsy. T. H. Suh and H. H. Merritt, Boston.—p. 57.

Size of Red Blood Corpuscle in Diabetes Mellitus. C. F. Mohr, Baltimore.—p. 67.

Differential Diagnosis of Traumatic Aneurysm and Arteriovenous Fistula. W. B. Porter, Richmond, Va.—p. 75.

False Positive Wassermann Reactions in Infectious Mononucleosis. A. Bernstein, Baltimore.—p. 79.

*Tuberculosis of Intestines in Tuberculous Anthracosilicosis. R. Charr and A. C. Cohen, White Haven, Pa.—p. 83.

Effect of Sodium Chloride Deficiency on Gastric Acidity. M. H. Soley, J. B. Lagen and J. C. Lockhart, San Francisco.—p. 88.

Origin of Emotional Factors in Normal Pregnant Women. J. C. Hirst and Flora Strousse, Philadelphia.—p. 95.

Pneumococcic Meningitis with Recovery: Report of Three Cases. W. B. Allan, S. Mayer Jr. and R. Williams, Baltimore.—p. 99.

Continued Use of Protamine Zinc Insulin.—Ralli and her associates discuss twenty patients with severe diabetes mellitus who were continuously on protamine zinc insulin for from one to eight months or more. At the end of this time protamine zinc insulin was discontinued because it was impossible to prevent a significant degree of glycosuria. All the patients had previously been under observation and treatment for an equal or longer period of time on soluble insulin. It was impossible to transfer successfully four of the patients to protamine zinc insulin and it was discontinued at the end of from one to two months. Of the remaining sixteen, after eight months or more of this therapy it was found necessary to return seven of the patients to soluble insulin because of the occurrence of alternating periods of uncontrolled glycosuria and insulin shock. Of the remaining eleven, eight have required soluble insulin as well as protamine zinc insulin in order to control the diabetes. In three patients the diabetes was adequately controlled on protamine zinc insulin alone. It is believed that beneficial effects followed the use of protamine zinc insulin in only these three patients. One additional patient, a 15 year old girl, has been treated successfully with protamine zinc insulin alone for a period of seven months, making a total of four patients with severe diabetes successfully treated with protamine zinc insulin. Three of the successfully treated patients were found to have low basal metabolic rates. It may be that lowered thyroid activity would tend to render these patients more sensitive to the action of insulin. If this were the case, it would naturally follow that a more slowly absorbed insulin would be more effective and that less of it would be required to control the glycosuria. Possibly this may be one of the reasons for the successful response of some patients to protamine zinc insulin.

Picrotoxin as Antidote for Barbiturates.—Rovenstine presents four case reports as examples of the clinical effectiveness of picrotoxin as an antidote for barbiturates. The cases

reported are those in which the derivative of the drug and the amount (from 4.9 to 32.5 Gm.) taken could be established with reasonable accuracy. Three patients recovered. The patient who did not recover had taken 32.5 Gm. of sodium barbital. This is usually regarded as hopelessly fatal. The experience with these patients suggests that, in human beings, results with picrotoxin in barbiturate poisoning may be anticipated which are identical with those found by Tatum and his co-workers in laboratory animals. In addition to slow intravenous infusion of picrotoxin, active, close supervision is essential. Frequent changes in position, maintenance of body temperature, support of circulation and nutrition with intravenous fluids, frequent gastric lavage and feeding, frequent catheterization, diuretics, blood transfusion, oxygen therapy and the use of an endotracheal airway and frequent cleansing of the trachea by suction through the airway are indicated and their importance is not surpassed by the use of picrotoxin.

Tuberculosis of Intestine.—Charr and Cohen determined the incidence of intestinal tuberculosis in forty-two cases of tuberculous anthracosilicosis and in seventy-five cases of nonanthracosilicotic pulmonary tuberculosis that came to necropsy. Intestinal tuberculosis was present in eight of forty-two cases of anthracosilicosis. Of the seventy-five cases of nonanthracosilicotic pulmonary tuberculosis, intestinal tuberculosis was present in thirty-eight. Tuberculosis of the intestine, when it occurs in the presence of anthracosilicosis, is most frequently found in early or moderately advanced anthracosilicosis. In this stage the incidence of intestinal involvement is practically the same as in nonanthracosilicotic pulmonary tuberculosis. In the presence of far advanced anthracosilicosis intestinal tuberculosis is uncommon; only 7 per cent of twenty-eight cases showed intestinal tuberculosis. This relative infrequency of intestinal tuberculosis appears to be due to the extensive fibrosis of the lungs and the chronicity of the pulmonary tuberculosis usually present in these patients. A combination of these two conditions apparently tends to prevent the spread of tuberculous infection to other parts of the body. The incidence of intestinal tuberculosis was greater among persons less than 30 years of age in both the anthracosilicotic and the nonanthracosilicotic group. In the majority of cases of intestinal tuberculosis in anthracosilicosis there were no symptoms referable to the gastrointestinal tract. The vague abdominal discomfort frequently complained of by anthracosilicotic patients may well be due to chronic passive congestion of the gastrointestinal tract secondary to gradual myocardial failure.

American Review of Tuberculosis, New York

38: 1-142 (July) 1938

Skin as an Organ of Experimental Tuberculous Infection. H. Sewall and G. Duffner, Denver.—p. 1.

Allergic and Desensitized Guinea Pigs: Study of Factors Bearing on the Problem of Immunity in Tuberculosis. H. S. Willis, C. E. Woodruff, Ruby G. Kelly and Marie Voldrich, Northville, Mich.—p. 10.

Accessory Stomach in the Right Thorax. T. Lowry and L. J. Moorman, Oklahoma City.—p. 27.

Isolated Hyperplastic Ulcerative Tuberculosis of the Small Intestine. S. E. Wolpaw, Cleveland.—p. 32.

Influence of Sulfocyanates on Tuberculosis: Study of Sulfocyanates in Hypertensive Tuberculous Patient, the Tuberculous Guinea Pig and in Mediums. J. Steidl, W. Steenken Jr. and F. H. Heise, Trudeau, N. Y.—p. 50.

Comparison of Direct Smear, Flotation-Concentration and Culture in Sputum Examination. C. R. Smith, Los Angeles.—p. 57.

Plombage in Pulmonary Tuberculosis: Progress Report Based on Animal and Clinical Experiments with an Agar-Agar Compound. J. W. Cutler, Philadelphia.—p. 62.

Intracutaneous Tuberculin Test: Clinical Investigation of Some Factors Involved. M. Paretzky, Los Angeles.—p. 81.

Incidence of Tuberculosis Among Blind School Children. Camille Kereszturi, New York.—p. 96.

Tuberculosis Survey in Chicago High Schools. J. B. Novak and J. S. Kruglick, Chicago.—p. 106.

Tuberculosis Control in Germany. H. R. Edwards, New York.—p. 115.

Arkansas Medical Society Journal, Fort Smith

35: 53-68 (Aug.) 1938

Spontaneous Pneumopericardium: Report of Case. A. A. Gilbert, Fayetteville.—p. 53.

Some Personal Experiences with the Sclerocorneal Trephine Operation. E. C. Moulton, Fort Smith.—p. 57.

Modern Treatment of Varicose Veins. C. A. Rosenbaum, Little Rock—p. 59.

Journal of Clinical Investigation, New York

17: 369-538 (July) 1938

Simple Method for Estimation of Total Protein Content of Plasma and Serum: I. Falling Drop Method for Determination of Specific Gravity. B. M. Kagan, Baltimore.—p. 369.

Id.: II. Estimation of Total Protein Content of Human Plasma and Serum by Use of Falling Drop Method. B. M. Kagan, Baltimore.—p. 373.

Chemical Composition of Voluntary Muscle in Muscle Disease: Comparison of Progressive Muscular Dystrophy with Other Diseases Together with Study of Effects of Glycine and Creatine Therapy. J. G. Reinhold and G. R. Kingsley, Philadelphia.—p. 377.

*Late Effects of Bilateral Carotid Sinus Denervation in Man: Report of Two Cases with Studies of Vascular Reflexes. R. B. Capps and G. de Takáts, Chicago.—p. 385.

Renal Factor in Arterial Hypertension with Coarctation of the Aorta. D. A. Rytand, San Francisco.—p. 391.

Effects on Cardiovascular System of Fluids Administered Intravenously in Man: II. Dynamics of Circulation. M. D. Altschule and D. R. Gilligan, Boston.—p. 401.

Changes in Blood and Interstitial Fluid Resulting from Surgical Operation and Ether Anesthesia. J. D. Stewart and G. Margaret Rourke, Boston.—p. 413.

Observations on Blood of Workmen Exposed to High Temperatures. P. L. McLain and E. S. Montgomery, Pittsburgh.—p. 417.

*Nature of Lowered Resistance to Infection in Diabetes Mellitus. A. Marble, H. J. White and A. T. Fernald, Boston.—p. 423.

Actions of Crystalline Vitamin D_2 (Calciferol) in Chronic Parathyroid Tetany. G. Klatskin, Rochester, N. Y.—p. 431.

*Cyanosis Without Sulfhemoglobinemia or Methemoglobinemia in Patients Receiving Sulfanilamide Treatment. L. C. Chesley, Jersey City, N. J.—p. 445.

Studies of Circulation in Presence of Abnormal Cardiac Rhythms: Observations Relating to (Part I) Rhythms Associated with Rapid Ventricular Rate and to (Part II) Rhythms Associated with Slow Ventricular Rate. H. J. Stewart, J. E. Deitrick, N. F. Crane and W. P. Thompson, New York.—p. 449.

Study of Some of Physiologic Effects of Sulfanilamide: I. Changes in Acid Base Balance. A. F. Hartmann, Anne M. Perley and H. L. Barnett, St. Louis.—p. 465.

"Acid" Phosphatase Occurring in Serum of Patients with Metastasizing Carcinoma of Prostate Gland. A. B. Gutman and Ethel Benedict Gutman, New York.—p. 473.

Reactions of Human Subjects to Injection of Purified Type Specific Pneumococcus Polysaccharides. M. Finland and J. W. Brown, Boston.—p. 479.

Tissue Pressure (Intracutaneous, Subcutaneous and Intramuscular) as Related to Venous Pressure, Capillary Filtration and Other Factors. H. S. Wells, J. B. Youmans and D. G. Miller Jr., Nashville.—p. 489.

Carotid Sinus Denervation in Man.—Capps and de Takáts studied the vascular reflexes of two patients on whom bilateral carotid sinus denervation was performed eight and one-half and seventeen months previously. From the results they conclude that no permanent hypertension or tachycardia resulted from bilateral carotid sinus denervation. Furthermore, at the time of examination there was no evidence of increased sympathetic activity or increased lability of the blood pressure and pulse as might be demonstrated by exercise. However, there was a definite postural hypotension. The possibility that a similar mechanism, namely loss of sensitivity of the carotid sinuses to normal physiologic stimuli, may account for the observations in certain cases of idiopathic postural hypotension is pointed out.

Lowered Resistance in Diabetes Mellitus.—Marble and his associates performed twenty-five tests on twenty-three nondiabetic persons and twenty-seven tests on twenty-seven diabetic patients in order to discover the difference, if any, in the inhibitory action and phagocytic power of the bloods on beta hemolytic streptococci. The results are of an essentially negative character in that they show no significant difference between the bactericidal, bacteriostatic or phagocytic power of diabetic as compared with normal blood. Approximately the same variation of bactericidal or phagocytic power was found among the group of diabetic patients, regardless of duration, severity or state of control of the diabetes, as among the group of normal individuals selected at random. This variation is without doubt partly dependent on former chance contacts, chiefly during infections, between the persons concerned, diabetic or nondiabetic, and the specific (or to a less extent, related) bacterial strains used. Among other factors, aside from the possible influence of diabetes itself, is the variable capacity of individuals to respond to antigenic contacts. Diabetic patients who successfully combat past infections thereby develop specific immunity to roughly the same extent as do nondiabetic controls. It seems likely that the commonly occurring malnutrition, dehydration and acidosis of the poorly controlled diabetic per-

son may contribute to poor resistance in a manner which is not reflected in the type of study reported. Perhaps also one should consider more specifically the functional integrity of the fixed tissue cells, i. e. the mononuclear cells of the reticulo-endothelial system. The possibility exists that, in the uncontrolled diabetic patient the hypercholesteremia which is present not infrequently may be associated with a "blockade" of the reticulo-endothelial system with consequent lowering of its efficiency.

Cyanosis in Patients Receiving Sulfanilamide.—During the past year Chesley encountered eight patients in whom cyanosis developed following treatment with sulfanilamide. No significant difference was found between the calculated and the measured carbon monoxide capacities. This precludes the existence of more than minimal amounts of sulfhemoglobinemia or methemoglobinemia in these patients, all of whom had cyanosis. Experiments were carried out with methemoglobin and sulfhemoglobin to determine whether sulfanilamide would enhance the carbon monoxide capacity. Sulfanilamide had no effect on the carbon monoxide capacity of either methemoglobin or sulfhemoglobin. The frequent reactions to sulfanilamide such as headache, nausea, malaise, vertigo, lassitude, tinnitus, accelerated pulse and respiration and loss of alkali in the urine constitute the syndrome of "mountain sickness," which is caused by anoxia. If the drug does have this effect, perhaps the customary use of sodium bicarbonate with sulfanilamide is not wholly desirable. The exçretion of alkali with the fall in the combining power of the blood carbon dioxide would appear to be a compensatory response to the loss of carbon dioxide blown off during the accelerated respiration. Sulfanilamide has been recommended in treating pneumonia. In pneumonia, anoxia is often already a serious complication. The fact that Marshall and Walzl with seven cases, Mull and Smith in one case and the author with eight cases have not found sulfhemoglobinemia or methemoglobinemia in high enough concentration to cause noticeable cyanosis casts serious doubt on the prevalent idea that cyanosis following sulfanilamide is usually attributable to these hemoglobin derivatives. This is not to deny that in some cases the cyanosis may be so caused. Discombe did find considerable sulfhemoglobinemia in six of seven cases. He attributed this to the concurrent use of magnesium sulfate, which presumably causes an enterogenous sulfhemoglobinema perhaps catalyzed by sulfanilamide. Paton and Eaton found four of nineteen patients to have a methemoglobinemia, which was proved spectroscopically. From this it is concluded that before cyanosis in a given case is attributed to sulfhemoglobinemia or methemoglobinemia these pigments must be identified and shown to be present in such concentration as would give the observed degree of cyanosis.

Journal of Immunology, Baltimore

35: 1-74 (July) 1938

Second Attacks of Experimental Poliomyelitis in Macacus Rhesus Monkeys: II. Immunity or Lack of Immunity to Homologous and Heterologous Strains of Virus. J. A. Toomey, Cleveland.—p. 1.

Experiments with Staphylococcus Enterotoxin. C. E. Dolman, Vancouver, B. C., and R. J. Wilson, Toronto.—p. 13.

*Immunization of Respiratory Tract: Comparative Study of Antibody Content of Respiratory and Other Tissues Following Active, Passive and Regional Immunization. T. E. Walsh and P. R. Cannon, Chicago.—p. 31.

Response in Horse to Mexican Typhus Infection. M. Ruiz Castaneda and J. Vargas-Curiel, Mexico City, Mexico.—p. 47.

Phospholipids and Cholesterol in Plasma of Immunized Horses. A. Wadsworth and L. W. Hyman, Albany, N. Y.—p. 55.

Analysis of Alcohol-Ether Extract of Horse Serum. L. W. Hyman, Albany, N. Y.—p. 71.

Immunization of Respiratory Tract.—Walsh and Cannon carried out experiments which demonstrate that following active or passive general immunization antibodies tend to be distributed rather uniformly through the tissues and that the ratio of tissue antibody to serum antibody is, on the average, between 1:10 and 1:15. The antibody titer of the tissues of the respiratory tract (nasal mucosa and lungs) following active regional vaccination is consistently higher than that of the other tissues tested, and the tissue antibody to serum antibody ratio of the nasal mucosa and of the lungs is, on an average, about 1:5. The method of extraction of the tissues has been improved and this has eliminated the possibility of nonspecific flocculins or group agglutinins confusing the results, particularly in the lower dilutions. Several explanations for the consistently higher tissue antibody to serum antibody ratio of the regionally immunized tissues are possible. It is suggested that the probable explanation for the observations is that antibodies are formed locally in the regionally stimulated tissues and diffuse from them into the general circulation. Whether local formation or local concentration of antibody is the true explanation, the important fact remains that the ratio of tissue antibodies to serum antibodies is higher in tissues stimulated by regional vaccination than by either active or passive general immunization. Regional vaccination would seem therefore the preferable method for elevating the level of resistance of tissues at the port of entry to the body.

Journal of Nutrition, Philadelphia

16: 1-102 (July) 1938

Stability of Carotene in Plant Tissues. M. W. Taylor and W. C. Russell, New Brunswick, N. J.—p. 1.

Digestibility and Nutritional Value of Cereal Proteins in the Human Subject. J. R. Murlin and H. A. Mattill, Rochester, N. Y.—p. 15.

Egg-Replacement Value of Several Proteins in Human Nutrition. Emma E. Sumner, H. B. Pierce and J. R. Murlin, Rochester, N. Y.—p. 37.

Concerning Toxicity of Vitamin A. E. B. Vedder and C. Rosenberg, Washington, D. C.—p. 57.

Environmental Temperature and "Rat Acrodynia." P. György, Cleveland.—p. 69.

Availability of Calcium in Spinach, in Skim Milk Powder and in Calcium Oxalate. B. W. Fairbanks and H. H. Mitchell, Urbana, Ill.—p. 79.

Radiographic Demonstration of Protection by Vitamin D Against Metaphysical Decalcification in Adult Rats on High Calcium-Low Phosphorus Diet. B. O'Brien and K. Morgareidge, Rochester, N. Y.—p. 91.

Kansas Medical Society Journal, Topeka

39: 281-324 (July) 1938

Hemiplegia: Some of Its Pathologic and Clinical Features. L. J. Karnosh, Cleveland.—p. 281.

Postpartum Care of Cervix, with Special Reference to Carcinoma Prophylaxis. R. A. West, Wichita.—p. 285.

*Tularemia: Report of Three Cases. H. B. Melchert, Council Grove.—p. 288.

Diagnosis and Management of Hyperthyroidism. P. E. Craig, Coffeyville.—p. 292.

Tularemia.—Melchert reports three cases of tularemia, evidently contracted from fish that were caught in a fish trap in which a rabbit was placed as bait. All three patients were given two intravenous injections of 15 cc. each of antitularemic serum on successive days without any reaction. Two of the three patients definitely improved, one in twenty-four hours, the other in forty-eight hours after administration. The third patient seemed to be benefited only slightly. The improvement in the two instances seemed to be too prompt to have been a coincidence. The only conclusion that can be drawn is that the administration of antitularemic serum should be worth trying in other cases.

Laryngoscope, St. Louis

48: 443-526 (July) 1938

*Thyroxine Therapy in Otosclerosis: Report of Forty-Two Cases. M. A. Goldstein, St. Louis.—p. 443.

What Is Justifiable to Do in Otitic Meningitis? (*a*) Brief (Historical) Review of Operative Treatment of Purulent Meningitis. T. J. Harris, New York.—p. 458.

Id.: (*b*) Surgical Indications in Suppurative Meningitis. J. G. Dwyer, New York.—p. 461.

Id.: (*c*) Surgical Treatment of Meningitis. I. Friesner and H. Rosenwasser, New York.—p. 472.

Id.: (*d*) Sulfanilamide and Related Compounds in Treatment of Meningitis Secondary to Ear and Sinus Infections. E. Appelbaum, New York.—p. 482.

Surgical Technic for Conservation of Hearing in Chronic Mastoiditis. J. M. Smith, New York.—p. 499.

Thyroxine in Otosclerosis.—Goldstein has used one sixty-fourth grain (0.001 Gm.) of thyroxine in forty-two instances of otosclerosis in young persons, following the technic of Gray. The tablet of thyroxine placed on a watch glass is dissolved in four drops of warm sterile distilled water and is injected through the drum membrane directly into the cavity of the middle ear so that it may be in contact with the promontory and oval window. The patient's head is inclined to a completely lateral position for the ear to be anesthetized with from 15 to 20 drops of aniline oil-cocaine solution. The solution is dropped to the fundus of the canal and is allowed to remain there for five minutes, when it is carefully swabbed out. The insertion of the

hypodermic needle for injecting the thyroxine is at the point half way between the tip of the malleus handle and the posterior rim of the annulus tympanicus. Immediately after the injection, with the patient in an erect position and with his head thrown well backward, the patient is directed to keep the mouth open wide for three minutes, thus preventing part of the injected fluid from escaping down the eustachian tube. Following the injection, the patient is instructed to remain quiet for from twenty to thirty minutes and is further cautioned not to be too active for the rest of the day. The thyroxine treatment consists of four consecutive injections made alternately in the right and the left ear at intervals of one week. The selection of patients who may be best qualified to receive such treatment is based largely on one's ability to make a diagnosis of clinical otosclerosis. Patients more than 30 years of age usually are less satisfactory subjects for the treatment, either because of their age or because of the long duration and progressive character of their defective hearing. Of the forty-two patients subjected to thyroxine treatment, twenty-three have shown definite improvement in hearing capacity and in some cases cessation or reduction of tinnitus and a general clarification in the perception of speech, and ten show slight improvement by comparison of audiograms before and after injection; but this was not stabilized in the final audiograms six months or more later. In nine no improvement was noted following treatment. In no case was there any decrease in hearing following these injections.

Medical Annals of District of Columbia, Washington

7: 207-240 (July) 1938

The Cut Tendon. P. A. Caulfield, Washington.—p. 207.
Interpretation of Certain Cardiac Signs in Children. J. A. Lyon, Washington.—p. 211.
Artificial Insemination. W. R. Stokes, Washington.—p. 218.
Treatment of Rheumatoid Arthritis. W. K. Myers, Washington.—p. 220.
Signs and Symptoms of Intracranial Trauma. H. H. Schoenfeld, Washington.—p. 223.

New England Journal of Medicine, Boston

219: 75-108 (July 21) 1938

The Work and Aims of the United States Public Health Service. T. Parran, Washington, D. C.—p. 75.
*Tolerance to and Toxicity of Insulin: I. With Spontaneous Eating. F. M. Allen, with assistance of J. H. Rice, New York.—p. 77.
Traumatic Rupture of the Diaphragm in a Child: Report of Case. P. H. Duff, Peabody, Mass.—p. 84.
Hereditary Arthrodysplasia Associated with Dystrophy of Nails: Report of Case. J. W. Sever, Boston.—p. 87.
Treatment of Pulmonary Tuberculosis: Comparison of Home and Sanatorium Methods. R. Volk, Boston.—p. 89.
The Cost of Institutional Care of Epileptics in Massachusetts. D. V. Brown and M. Moore, Boston.—p. 92.

Tolerance to and Toxicity of Insulin.—In an attempt to determine the tolerance to and toxicity of insulin after cautious trials with ascending doses of insulin in several patients in the Psychiatric Institute, Allen gave a strong, young diabetic patient subcutaneous injections of 750 and 1,000 units of insulin. His insulin requirement was 75 units daily. These trials, together with animal experiments, disposed of fears that such doses would demand a proportionately huge supply of carbohydrate. Instead of the 100 Gm. of starch and sugar it was learned that any small amount, such as 10 Gm., would act temporarily as an antidote for 750 or 1,000 units of insulin but that these feedings had to be repeated, because the patient was unable at any one time to eat enough to give protection through the entire duration of the effects of such a dose. Protection was afforded by a series of intravenous injections of dextrose of only 10 Gm. each. The blood sugar curves indicate that the effects of the insulin lasted for about twenty-four hours. This duration was not appreciably changed by alterations in the amount of carbohydrate used as an antidote or by the high or low level of blood sugar during this time. The patient experienced hunger and faintness only when there was marked hypoglycemia. Otherwise he felt well. In particular, the absence of disturbance of appetite or digestion at all times appears significant as indicating that these doses were well within the bounds of safety and that they did not establish the maximal limit of insulin tolerance in this individual. The foregoing doses failed to produce symptoms of intoxication, indicating that the tolerance of many persons must be higher than this. On the other hand, doses of only a few units can produce the typical condition in predisposed persons. The insulin dosage which can be tolerated without intoxication in the foregoing sense has been determined more or less accurately for several animal species. For a strong man it is probably above 15 units per kilogram of weight. For the dog and cat it appears to be less than this. For the rabbit it is from 35 to 40 units per kilogram, for the mouse 1,000 units, and for the rat from 2,000 to 4,000 units. For birds it is still higher. This series may offer some support for Sakel's hypothesis, in showing lower insulin tolerance of the species having greater development of the higher nervous centers. The fact that patients sensitive to insulin are usually nervous while those with higher resistance are more phlegmatic may, if generally confirmed, be significant from the psychiatric as well as the general physiologic point of view. No animal ever succumbs to insulin hypoglycemia while eating up to the capacity of a normal hungry individual of the species—loss of appetite always precedes any dangerous symptoms. The high tolerance of strong or average persons confirms the prevailing view of the nontoxicity of insulin for them up to an extremely high limit, but it does not imply that similar doses can be given safely to weak or sensitive individuals.

New York State Journal of Medicine, New York

38: 969-1014 (July 1) 1938

Suprarenal Backache. G. D. Hoffeld, Troy.—p. 969.
Fox-Fordyce Disease in a Male. S. M. Kaufman, New York.—p. 971.
Malaria in Drug Addicts. L. J. Boyd and M. Schlackman, New York.—p. 974.
The Saddle Nose. A. A. Cinelli and J. A. Cinelli, New York.—p. 977.
Acute Sinus Infections. F. W. White, New York.—p. 982.

38: 1015-1058 (July 15) 1938

Effects of Insulin, Metrazol and Camphor Convulsions on Brain Metabolism. S. B. Wortis, New York.—p. 1015.
*Gas Gangrene: Morbidity and Mortality in New York State (Exclusive of New York City)—Based on General Hospital Reports for the Years 1932-1936 Inclusive. O. W. H. Mitchell, T. L. Bryant and O. D. Chapman, Syracuse.—p. 1022.
Otitic Meningitis Due to Streptococcus Haemolyticus: Operation and Recovery. M. H. Kaiden, New York.—p. 1026.

Gas Gangrene.—Mitchell and his associates sent a questionnaire to the superintendents of all general hospitals of fifty or more beds in New York state requesting the following information: number of gas gangrene infections in the hospital during 1932 to 1936 inclusive, description of injuries or conditions and their care preceding the infection, time elapsing between injury and recognition of infection, bacteriologic confirmation, x-ray diagnosis, surgical care and general treatment, specific treatment results obtained, statement regarding need and value of serum, and suggestions and comments. The total indisputable gas gangrene infections for the five years number 135. Seventy-three additional cases were reported in which the diagnosis was doubtful or the data were incomplete. Predisposing factors have been arranged in the 135 cases. Nine diabetic patients had gas gangrene following amputation and died. Four arteriosclerotic patients had gas gangrene following amputation and three died. Six diabetic patients had gas gangrene before surgical treatment and three died. Seven deaths were listed under pregnancy. Nine patients received prophylactic injections of antitoxin and two died. These two fatalities probably resulted from damage other than gas gangrene infection. Eighty-four patients received therapeutic injections of serum and twenty-nine died. If the data submitted regarding gas gangrene are accepted, they indicate that infection by this group of spore-bearing bacteria are probably as frequent as tetanus. It is hoped that the statistics offered, incomplete as they are, will be of value in determining whether gas gangrene antitoxin should be prepared and supplied by the state department of health.

Oklahoma State Medical Assn. Journal, McAlester

31: 227-260 (July) 1938

Management of Hypertonic Period of Early Infancy. F. C. Neff, Kansas City, Mo.—p. 227.
Analgesia and Anesthesia in Labor. G. Allen, Oklahoma City.—p. 233.
Stillbirths. P. N. Charbonnet and E. O. Johnson, Tulsa.—p. 236.
Birth Control. G. Osborn, Tulsa.—p. 241.
Prenatal Care or the Management of Pregnancy. G. L. Kaiser, Muskogee.—p. 242.
Treatment of Poison Ivy. H. A. Foerster, Oklahoma City.—p. 245.

Physiological Reviews, Baltimore

18: 329-480 (July) 1938

Physiologic and Pathologic Aspects of Silica. E. J. King and T. H. Belt, London, England.—p. 329.
Role of Inflammation in Immunity. V. Menkin, Boston.—p. 366.
Hormones and the Placenta. W. H. Newton, New Haven, Conn.—p. 419.
Pharmacology of Anesthetic Gases. M. H. Seevers and R. M. Waters, Madison, Wis.—p. 447.

Psychiatric Quarterly, Utica, N. Y.

12: 405-612 (July) 1938

*Improvement and Recovery Rates in Dementia Praecox Without Insulin Therapy. D. Whitehead, Utica, N. Y.—p. 409.
"Spontaneous" Remissions in Dementia Praecox. R. C. Hunt, H. Feldman and R. P. Fiero, Rochester, N. Y.—p. 414.
Some Comparisons Between Insulin Treated and Non-Insulin Treated Cases of Schizophrenia. R. A. Savitt, Queens Village, N. Y.—p. 426.
Statistical Comparisons Between Preinsulin and Insulin Eras: Recoveries and Improvements. J. Notkin and F. J. DeNatale, Poughkeepsie, N. Y.—p. 432.
Insulin Therapy and Its Complications in Treatment of Psychoses. O. J. McKendree, Utica, N. Y.—p. 444.
Serious Complications of Insulin Shock Therapy. F. J. O'Neill, Central Islip, N. Y.—p. 455.
Protracted Comas Occurring During Insulin Hypoglycemic Therapy. W. A. Horwitz, J. R. Blalock and M. M. Harris, New York.—p. 466.
Prolonged Coma in Insulin Treatment of Dementia Praecox. R. F. Binzley, Brentwood, N. Y., and J. L. Anderson, Miami, Fla.—p. 477.
Further Metabolic Studies Regarding Effect of Insulin Hypoglycemic Therapy in Mental Patients: Metabolic Changes Accompanying the Glucose Tolerance Test Before and After the Course of Treatment. M. M. Harris, J. R. Blalock and W. A. Horwitz, New York.—p. 489.
Studies in Parotid Secretion of Patients Before, During and After Insulin Hypoglycemic Therapy. E. I. Strongin, L. E. Hinsie and M. M. Harris, New York.—p. 506.
Mechanism Underlying Low Rectal Temperature in Hypoglycemia: Role of Adrenalin. H. S. Barahal, Kings Park, N. Y.—p. 514.
Outcome of Insulin Treatment of 1,000 Patients with Dementia Praecox. B. Malzberg, Albany, N. Y.—p. 528.
Status of Paroled Patients Treated with Hypoglycemic Shock. D. M. Carmichael, Brentwood, N. Y.—p. 554.
Prognosis in Dementia Praecox. J. A. Taylor and C. F. Von Salzen, Kings Park, N. Y.—p. 576.
Interpersonal Content in Schizophrenic Thought. H. K. Johnson, Orangeburg, N. Y.—p. 583.

Dementia Praecox Without Insulin Therapy.—Whitehead discusses the outcome by 1936 of 105 consecutive admissions, during the fiscal year 1931-1932, of dementia praecox. This allows a minimal observation period of five and one-half years. None of the patients were treated with insulin. The diagnosis was changed in three cases; 6 per cent of the patients died, 42 per cent have been returned to the community and 52 per cent are in hospitals. In the sixty-four cases diagnosed hebephrenic the improvement rate was found to be 51.5 per cent with 1.5 per cent recovery, 21.8 per cent much improvement and 28.2 per cent improvement. In the thirty-one paranoid cases the total improvement rate was 48.2 per cent with no recoveries. The cases of simple and catatonic type were too few to permit satisfactory conclusions. Exacerbation of symptoms necessitating readmission to the hospital among those discharged was found to occur in nine, or 21 per cent, of the forty-two discharged patients. Five of these were from the much improved and four from the improved groups. Of these nine who were readmitted only two remain in the hospital, the other seven having been discharged again. These results were more favorable than those of a similar series of cases surveyed after one year of observation and insulin treatment. In the latter 69 per cent were found to be unimproved, compared with 49 per cent in the five year survey. Comparison with results achieved by routine institutional measures plus insulin therapy shows a marked increase in the recovery rate and a marked diminution in the percentage of unimproved patients in the series treated with insulin. The percentage of improved and much improved patients is virtually the same with or without insulin.

Public Health Reports, Washington, D. C.

53: 1119-1180 (July 8) 1938

*Mortality During Periods of Excessive Temperature. Mary Gover.—p. 1122.
Poliomyelitis: Prevalence Since 1915 and the Present Situation. B. C. Hampton.—p. 1143.

Mortality During Excessive Temperature.—Gover discusses the weekly mortality rates from all causes for eighty-six large cities during the months of May, June, July, August and the first part of September of 1925 and 1930 to 1937 and gives figures, curves and tables. In five of these nine years there are clearly defined peaks which occurred in the weeks ended June 13, 1925, July 4, 1931, July 28, 1934, July 18, 1936, and July 17, 1937. Slight increases in mortality occurred during July in 1930 and 1932 and during the first week of August 1933. During the summer of 1935, however, and the summers of 1926 to 1929, weekly rates of mortality from all causes did not show any marked deviations from normal. The week of maximal mortality occurred in July in six years and during the first part of June and the first part of August, respectively, in two other years. A comparison of maximal summer rates with a summer normal and with a normal for January, in all cities combined, is 12.5 actual rate and 10.2 normal rate per thousand of population (annual basis) for week ended July 4, 1931, and respectively 12.3 and 10 for July 28, 1934, 17 and 10.1 for July 18, 1936, and 12.3 and 10 for July 17, 1937. The actual normal rate for January is 12.6, based on the four weeks ended Jan. 27, 1934. During three of the four years the maximal summer rate was about equivalent to a normal January rate and exceeded it in 1936 by 4.4 per thousand of population. The foregoing weekly rates are weighted averages of the rates in the total number of cities, and thus the size of the death rate in the peak week is influenced by the area which was most severely affected. The area of high mortality was largely confined to the eastern coast cities in 1925 and 1937 and to the North Central section in 1931 and 1934. Although the rates for the affected individual cities in 1934 were greater than similar rates in 1937, the rise in the curve for all cities combined is about as great in 1937 as in 1934, owing to the concentration of the population in the East, which was the area of high mortality in 1937. Mortality which is certified and recorded as due to "excessive heat" includes by no means all excess deaths which occur during periods of extreme temperature. During July of 1934 in Kansas, "excessive heat" accounts for only about one fourth of the excess of deaths which occurred during that month. The remainder of the excess was distributed largely among diseases of the heart, cerebral hemorrhage, nephritis and pneumonia. Daily maximal temperatures for groups of cities and for individual cities in affected areas show that the excess in mortality is preceded by at least several successive days of extreme temperature. Excess mortality during a second period of extreme temperature in any one year is slight when compared with the excess mortality during the first major heat wave of the summer, even when the second rise in temperature is extreme.

Radiology, Syracuse, N. Y.

31: 1-130 (July) 1938

Thoracic Serioscopy: Method of Study for Pleuropulmonary Lesions. P. Cottenot, Paris, France.—p. 1.
X-Ray Diagnosis of Complete and Partial Acute Intestinal Obstruction. L. Solis-Cohen and S. Levine, Philadelphia.—p. 8.
Radiology in Amebiasis Diagnosis. G. Esguerra-Gómez, Bogotá, Colombia, South America.—p. 15.
*Roentgen and Light Therapy of Intestinal and Peritoneal Tuberculosis. E. Mayer and M. Dworkin, New York.—p. 35.
Local and General Irradiation in Hodgkin's Disease. L. F. Craver, New York.—p. 42.
Observations on Radiologic Chest Volume During Artificial Pneumoperitoneum Treatment. A. L. Banyai, Milwaukee.—p. 48.
Some Biologic Experiments with Condenser Discharge Type of X-Ray Tube. K. H. Kingdon, P. A. Zahl, C. P. Haskins and H. E. Tanis Jr., Schenectady, N. Y.—p. 52.
Bone (Calcium) Metabolism in Relation to Industrial Injury. W. W. Watkins, Phoenix, Ariz.—p. 59.
Treatment of Female Endocrinopathies. J. Kotz and Elizabeth Parker, Washington, D. C.—p. 66.
Studies on Effect of Radiation on Growth and Respiration of Various Tissues in Vitro: Lethal Dose and Sublethal Dose of X-Rays and Radium: Preliminary Report. Anna Goldfeder, New York.—p. 73.
Effect of Radiation on Cell Respiration: I. Respiration and Anaerobic Glycolysis of Mouse Kidney in Vitro Following Radiation. Anna Goldfeder and J. L. Fershing, New York.—p. 81.
Generators for Gamma Rays and Neutrons and Radiotherapeutic Possibilities. A. Bouwers, Eindhoven, Holland.—p. 89.
Experimental Study of Effects of Roentgen Rays on Gonads of the Developing Chick. J. M. Essenberg and A. Zikmund, Chicago.—p. 94.
How X-Rays May Kill Cells. H. Rudisill Jr. and J. H. Hoch, Charleston, S. C.—p. 104.

Intestinal and Peritoneal Tuberculosis.—Mayer and Dworkin discuss the effect that roentgen and ultraviolet irradiation have on intestinal and peritoneal tuberculosis, their effect on animal and human tissue, the indications and technic of

usage in accordance with the pathologic changes, the clinical applications and comparative clinical results. The use of roentgen and ultraviolet radiation for treatment of intestinal and peritoneal tuberculosis is often productive of good results, warranting more general use of these measures as adjuvants to rest and hygienic treatment. A trial of tumor dosage of x-rays under careful supervision is indicated in proliferative forms of intestinal and peritoneal tuberculosis that have not responded to smaller doses. With roentgen treatment, best results are obtained in hyperplastic and simple proliferative forms of intestinal and peritoneal tuberculosis, especially when applied early in ascitic forms of peritoneal tuberculosis. With ultraviolet therapy, both natural and artificial, the ascitic and proliferative forms of peritoneal tuberculosis as well as the proliferative and ulcerative forms of intestinal tuberculosis are generally responsive in patients not too critically ill.

Review of Gastroenterology, New York

5: 114-225 (June) 1938

Intestinal Manifestations of Systemic Disease. J. Felsen, New York.—p. 114.
Regional Enteritis. R. Upham, New York.—p. 133.
Bacteriology of Intestinal Tract in Certain Chronic Diseases: I. Sporulating Anaerobes, Aciduric Organisms and Colon Group. C. W. Lieb, G. H. Chapman, W. B. Rawls and M. H. Stiles, New York.—p. 142.
Medical Treatment of Enteric Granulomas (Ileitis) and Colitis. A. Bassler, New York.—p. 150.
Experimental and Clinical Strongyloidiasis. E. C. Faust, New Orleans.—p. 154.
X-Ray and Radium Therapy: Indications and Contraindications. I. I. Kaplan, New York.—p. 158.
Change of Intestinal Flora. B. Sokoloff, New York.—p. 165.
Clinical Classification of Intestinal Obstruction. E. Rosenthal, Budapest, Hungary.—p. 167.
Causes of Peptic Ulcer Recurrences and Their Prevention. I. R. Jankelson, Boston.—p. 170.
Seventy Proved Bleeding Duodenal Ulcers. W. R. Morrison, Boston.—p. 175.
Review of Acid Factor in Peptic Ulcer: Preliminary Report. I. W. Friedberg, New York.—p. 181.
Bacteriologic Problems Connected with Gastroenterology. G. F. Fasting, New Orleans.—p. 187.

Rhode Island Medical Journal, Providence

21: 99-112 (July) 1938

Factors in Maternal Mortality in Rhode Island: Conclusions Drawn from a Five Year Study. E. S. Brackett and M. Goldberger, Providence.—p. 99.
*Painful Shoulder in Association with Coronary Artery Disease. C. B. Leech, Providence.—p. 104.

Painful Shoulder and Coronary Disease.—Four patients with painful shoulders associated with disease of the coronary artery led Leech to a consideration of the possible causal relationship of the two conditions. Several articles concerned with this association have been found in the literature. The general opinion seemed to be that the association is too frequent to be accidental. The majority of the patients had pain in the left shoulder and anginal pain referred to the left arm. Three of the author's patients had pain in the shoulder to which the anginal radiation was referred, in two of them the right shoulder; in the fourth the anginal pain was substernal only. Painful shoulders are uncommon in forms of cardiac disease other than that due to sclerosis or occlusion of the coronary arteries. It is not difficult to distinguish pain of the shoulder from that of angina pectoris. The anginal pain is usually relieved by glyceryl trinitrate, while pain of the shoulder continues even though it may have been intensified during the anginal attack. Pain of the shoulder is not aggravated by exercise such as walking but there is marked limitation of movement of the arm; neither the shoulder nor the arm tolerates weight bearing. In the author's four patients the difficulty of the shoulder disappeared as general improvement in the cardiac condition came about; apparently as the coronary blood supply improved, the disability of the shoulder improved also. Diathermy and salicylates gave but little relief. That the site and radiation of anginal pain may be affected by extracardiac lesions is well recognized and there may be a somewhat similar reciprocal relation between pain of the shoulder and disease of the coronary artery; if so, the underlying condition in the girdle of the shoulder remains difficult to detect. If the pain of the shoulder is due to some sort of reflex stimulation, it seems logical to consider it as much a part of the cardiac picture as the angina pectoris itself and it is logical to judge by its disappearance that some improvement in the myocardial blood supply has occurred. In the absence of other definite causes for such disabilities of the shoulder and arm, disease of the coronary artery should be suspected and searched for by the usual methods.

Rocky Mountain Medical Journal, Denver

35: 577-664 (Aug.) 1938

Syphilis and the Medical Practitioner. T. Parran, Washington, D. C.—p. 595.
Fractures of Radius and Ulna at the Wrist. R. D. Schrock, Omaha.—p. 599.
Hemorrhagic Purpura and Its Relief by Splenectomy. J. W. Amesse, Denver.—p. 601.
Combined Operative and Injection Method of Treatment in Inguinal Hernia. C. L. Wilmoth, Denver.—p. 609.
*Quantitative Serologic Test for Syphilis. W. W. Williams, Denver.—p. 612.

Quantitative Serologic Test for Syphilis.—Williams has devised a quantitative test for syphilis based on Kolmer's modification of the Wassermann reaction and the principle involved is the use of graduated amounts of the serum to be tested. The amounts of serum used are 0.2, 0.1, 0.05 and 0.001 cc. The test is reported as 4 plus if all four amounts are positive, 3 plus if three are positive, 2 plus if two are positive, and 1 plus if only one is positive. If with the largest amount of serum (0.2 cc.) there is some degree of hemolysis, the result is reported as doubtful. This quantitative estimation of the amount of antibodies present in the serum is of practical value, he believes, in determining the result of therapy in cases in which treatment is being administered.

Southwestern Medicine, El Paso, Texas

22: 253-300 (July) 1938

Bone Traction for Correction of Scoliosis: Preliminary Report. F. Goodwin, El Paso, Texas, and J. W. Althaus, Hot Springs, N. M.—p. 253.
Tumors of the Uterus. G. W. Jones, Philadelphia.—p. 255.
Regional Enteritis. J. H. Woolsey, Woodland, Calif.—p. 258.
Anal Infections. H. Safford, El Paso, Texas.—p. 262.
The Hypertonic Infant. J. Hild, Douglas, Ariz.—p. 266.
Management of Hay Fever and Asthma in General Practice. L. O. Dutton, El Paso, Texas.—p. 270.
Adequate Treatment of Syphilis: II. E. C. Fox, Dallas, Texas.—p. 272.
Syphilis and Pregnancy. A. J. De Pinto, Phoenix, Ariz.—p. 274.

Tennessee State Medical Assn. Journal, Nashville

31: 251-292 (July) 1938

Recent Experience with Transurethral Prostatectomy. G. J. Thompson, Rochester, Minn.—p. 251.
The Bedside Diagnosis of Cardiac Irregularities. C. R. Thomas, Chattanooga.—p. 255.
Principles in Treatment of Fractures of Small Bones of the Hand. W. J. Sheridan, Chattanooga.—p. 263.
Nonconvulsive Toxemia of Pregnancy. F. E. Whitacre, Memphis.—p. 272.
Pilonidal Sinus. E. T. West, Johnson City.—p. 275.

Virginia Medical Monthly, Richmond

65: 449-514 (Aug.) 1938

Limitations of Phrenic Surgery in Pulmonary Collapse Therapy. F. S. Johns, Richmond.—p. 449.
Skin Manifestations in Tularemia. J. M. Hitch, Raleigh, N. C., and D. C. Smith, Charlottesville.—p. 452.
Nutritional Deficiencies and Their Relation to Clinical Course of Heart Disease. W. B. Porter, Richmond.—p. 459.
Program for Adequate Prevention and Better Treatment of Mental Illness. J. R. Blalock, Marion.—p. 467.
The Care of Infants with Allergic Eczema. W. A. McGee, Richmond.—p. 472.
Determination of Urinary Excretion of Vitamin C (Ascorbic Acid). T. D. Walker Jr., Newport News.—p. 475.
Colic (Gastro-Enterospasm). W. E. Keiter, Kinston, N. C.—p. 479.
Management of Acute Perforated Peptic Ulcer. B. W. Rawles Jr., Richmond.—p. 484.
The Heart in Myxedema. J. L. Guerrant and J. E. Wood Jr., University.—p. 488.
Present Day Practice of Painless Obstetrics. J. M. Whitfield, Richmond.—p. 492.
Toxic Goiter and Its Effect on Industry. N. W. Gillette, Toledo, Ohio.—p. 494.
The Practitioner's Attitude Toward State Medicine. F. M. Horsley, Arrington.—p. 498.
A Doctor Looks at Nursing. E. P. Lehman, Charlottesville.—p. 499.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

13: 89-192 (June) 1938

Intracranial Hemorrhage in the Newborn: Study of Diagnosis and Differential Diagnosis Based on Pathologic and Clinical Findings in 126 Cases. W. S. Craig.—p. 89.

Vitamin C Excretion in Children, with Particular Reference to Rheumatic Fever. J. D. Keith and Evelyn M. Hickmans.—p. 125.

*Otitis Media and Mastoiditis in Infancy. Grace McConkey and E. C. R. Couper.—p. 137.

Radiology in Diagnosis of Hypertrophic Pyloric Stenosis. L. Findlay.—p. 145.

Blood Phosphorus in Egyptian Infants. I. A. Sabri and M. A. Abboud.—p. 157.

Osteopetrosis. A. M. Nussey.—p. 161.

Cooley Syndrome in an English Child. E. G. L. Bywaters.—p. 173.

Otitis Media and Mastoiditis in Infancy.—Of the 1,324 infants less than 1 year old admitted to the Alder Hey Children's Hospital during 1936, McConkey and Couper found that 195 (14 per cent) suffered at one time or another from otitis media or otitis media and mastoiditis. In a certain proportion the otic infection was undoubtedly secondary to some other pathologic process. The remainder were cases in which the infection appeared to be responsible for the child's illness and in which, in the majority, suitable treatment of the ear resulted in improvement. The latter is called primary. Any doubtful case was included in the secondary group. In the secondary group (seventy-four cases) associated with respiratory infections the greatest number of cases and the highest death rate (31 per cent) occurs in the age group from 3 to 9 months, while in the group (twenty-one) associated with nutritional disturbance the greatest number occurs in the age group from birth to 6 months, with a death rate in this group of 45 per cent. In the group associated with nasopharyngitis (twelve cases) the greatest mortality (33 per cent) was in the age group from birth to 6 months. In the nine cases of otitis media complicated by another infection there were four fatalities. The previous method of feeding these children does not appear to influence the results. There were no deaths in the seven cases of primary classic mastoiditis. In the thirty-three primary cases of otitis media and mastoiditis the death rate was 84.8 per cent and the highest death rate appears to be in the age group from 1 to 3 months. All of the thirty-nine children with mild primary otitis media and mastoiditis recovered. Among the patients with classic mastoiditis only one was breast fed for more than three months, while the remainder all had shorter periods of breast feeding. In the toxic group the highest death rate occurred among the infants with no or less than one month of breast feeding. Operation is always indicated in classic mastoiditis and the results are good, in the toxic group the results are poor and in the mild group the results are good in selected cases. Once the infant's infection so overwhelms it as to produce symptoms of toxicity, its chances of survival are just as great with conservative treatment as with surgical intervention. The analysis of the seasonal incidence of the primary group shows that the greatest numbers occur during the months of July, August, September and October, the season of the year when diarrhea and vomiting are most prevalent in infancy. Confirmation is afforded for the theory already advanced by numerous authors that the well known diarrhea and vomiting syndrome is frequently caused by the presence of otitis media and latent mastoiditis, the pathology of which is of the nature of a retention phenomenon with lack of satisfactory drainage.

British Medical Journal, London

2: 53-106 (July 9) 1938

Survey of Prostatic Enlargement and Its Treatment. K. Walker.—p. 53.

Anemia and the Gastrointestinal Tract. Janet M. Vaughan.—p. 57.

*Further Observations on Benzedrine. E. W. Anderson.—p. 60.

*Use of Placental Extract in Epidemic of Measles. T. N. Parish.—p. 65.

A Woman Blind from Birth Who Acquired Sight at 22 Years of Age. R. Colley.—p. 67.

Molds and Asthma. E. M. Fraenkel.—p. 68.

Benzedrine in Mental Disease.—Anderson gave benzedrine orally to thirty-three patients with minor forms of mental disorders in daily doses ranging from 5 to 45 mg. and to eight normal subjects. In fifteen it was found necessary to discontinue the drug because of untoward effects. In two others the drug appeared to be of no value and was discontinued. In eleven a beneficial effect could be claimed, in some cases with reservations. In five no mental, physical and psychic effect was produced. Of the eleven patients who appeared to benefit from the drug only three had no physical symptoms—that is, the drug appeared to exert its effect in the psychic sphere alone. The principal symptoms were headaches, giddiness and cardiovascular symptoms. Of the normal subjects one had decreased frequency of micturition, another increased frequency, two had pain in the chest, one had palpitation, one had some anorexia, one felt giddy and tired and in one there were no physical symptoms. As for the effect of the drug on different psychiatric conditions, the best results were obtained with the depressed patients. The drug is perhaps of greatest value in the terminal stages of a depression—that is, when clinical improvement has already appeared. With regard to sleep, the results were variable. Of the normal subjects all but two experienced an increase in mental or physical activity. It is difficult to claim any great therapeutic value from benzedrine, but its use relieves the depressed patient even transiently and gives him a few hours' respite. It should be used cautiously.

Placental Extract in Measles.—Of 205 girls in a girls' school under the care of Parish, eighty-nine had not had measles. January 18 one child was found to be in the incubation stage of measles. Contacts were widely spread throughout the school. Prophylactic measures were discussed and placental extract was used in an attempt to modify the subsequent attacks and to lower the complication rate. By the end of the term (April 3) seventy-five of the eighty-nine susceptible girls had measles, as well as five of the 116 said to have had measles previously, two of whom had also received a prophylactic injection. The extract had no effect in preventing the attack of measles. Figures show that among the susceptible cases measles developed in 93 per cent of those who had been given the modifying injection and in 75 per cent of those who had not. The epidemic was of moderate severity, although there was a remarkable freedom from serious complications. The only complication of any severity was one case of suppurative otitis media.

Indian Medical Gazette, Calcutta

73: 321-384 (June) 1938

Treatment of Schizophrenia by Inducing Epileptiform Shocks by Drug Cardiazol: Experimental Study of Forty-Two Cases. J. E. Dhunjibhoy.—p. 321.

Treatment of Ascariasis. P. A. Maplestone and A. K. Mukerji.—p. 326.

*Clinical Investigation on Value of Proseptasine as Prophylactic in Puerperal Infection. S. N. Hayes and A. Sami.—p. 328.

Necessity of Teaching Frequency of Rheumatic Infection in Young Indians. H. Stott.—p. 330.

*Postarsphenamine Blood Dyscrasias. R. V. Rajam and R. B. Tampi.—p. 337.

Simple Method of Obtaining Hyperextension for Application of Plaster of Paris Jacket in Cases of Fracture of Thoracic and Lumbar Vertebrae. F. R. W. K. Allen and I. Basu.—p. 341.

Premedication in Sodium Evipan Anesthesia: Study of 535 Cases. E. S. Chellappa.—p. 342.

Control of Stegomyla Fasciata (Aedes Aegypti) Mosquitoes in Indian Country Craft by Mosquito-Proof Metal Cap (Bennett Pattern) for Drinking-Water Receptacles. F. D. Bana.—p. 344.

Bertiella Studeri, a Natural Tapeworm Parasite of Monkeys, in a Hindu Child. S. C. Roy.—p. 346.

Hydrogen Ion Concentration of Cholera Stools. C. L. Pasricha, D. N. Chatterjee and K. S. Malik.—p. 346.

Sulfanilamide Compound as Prophylactic in Puerperal Infection.—During 1937 Hayes and Sami administered *p*-benzyl-aminobenzene sulfonamide (proseptasine) prophylactically in all emergency cases of puerperal infection admitted to the hospital. From January to June 1937 they gave two tablets three times daily (3 Gm.) for four days. From July to December 1937 they gave four tablets three times daily (6 Gm.) for four days. There was a reduction of morbidity due to genital sepsis from 22.16 per cent (1935) and 16.94 per cent (1936) to 11.45 per cent in 1937, during which time the drug was given prophylactically. This reduction occurred chiefly in the abnormal cases: the membranes were ruptured and infection was potential or apparent, the patient had been in labor from a few hours to a few days, obstetric shock was usually present, multiple vaginal examinations or attempts at delivery had been practiced or the case was usually terminated by means of an obstetric operation. No ill effects have been observed as a result of the

administration of the drug; as much as 125 Gm. has been administered without signs of toxic symptoms. The authors suggest that larger doses of the drug be used. Although a reduction of 5 per cent in morbidity is not striking, they feel that it is encouraging enough to advocate further investigation with increased dosage.

Postarsphenamine Blood Dyscrasias.—Rajam and Tampi encountered three cases of postarsphenamine blood dyscrasia in treating 18,620 cases of syphilis (64,101 injections of arsenicals). Recovery in case 1 confirms the observation of other workers that usually thrombocytopenic cases run a benign course and respond well to ordinary therapeutic measures. The platelet count in this case was much lower than that enumerated in any other case so far. Though the patient was on his way to recovery it cannot be stated that complete regeneration of the platelets had occurred. When he was discharged the count was only 50,000 per cubic millimeter. The symptoms in this case started two days after the last injection. Case 2 represents a typical secondary aplastic anemia with all the blood elements employed. The severe type of aplastic anemia caused in this case may have been the result of fuadin or *p*-oxyacetylaminophenylarsinate of diethylamine (acetylarsan) or a combination of the two. Neoarsphenamine was employed in case 3. Agranulocytosis was the most prominent feature. Examination of the bone marrow showed the aplastic condition of the hematopoietic system. Possibly if the patient had lived longer a better clinical picture of aplastic anemia might have developed. In cases 2 and 3 there were no lesions in the throat which are usually associated with low neutrophil counts. The futile attempts at treatment are shown by the two fatal cases. Undue bleeding from the gums during the arsenical treatment offers a clue in some cases to this group of disorders. It is perhaps worth while to do a preliminary blood examination in debilitated patients and in the occasional cases in which spreading and sloughing of the lesion take place in spite of antisyphilitic treatment. The earliest evidence of damage to the hematopoietic system calls for prompt withdrawal of further medication with arsenic. Epinephrine is used in platelet deficiency; calcium, thiosulfate and liver preparations may be used as a routine. Bleeding may be stopped by symptomatic measures. Regeneration of the leukoblastic tissues is now attempted by using pentnucleotide and similar preparations. Repeated blood transfusion may tide over a crisis and give time for other measures to be adopted in the regeneration of the hematopoietic system. No further arsenical injections are to be given in the cases in which recovery has occurred. Recurrence is said to be invariably fatal.

J. Royal Inst. Public Health and Hygiene, London

1: 499-562 (June) 1938

"Respice et Prospice." T. Oliver.—p. 509.
Prevention of Minor Ailments. C. Hoyle.—p. 519.
The Family as a Unit in National Health. L. Findlay.—p. 529.
The National Importance of Women's Health. Margaret Salmond.—p. 537.
The Use and Abuse of Physical Training. R. Cove-Smith.—p. 557.

Lancet, London

2: 1-60 (July 2) 1938

Diabetes Mellitus: Survey of Changes in Treatment During the Last Fifteen Years. G. Graham.—p. 1.
*Serum and Sulfanilamide in Acute Meningococcic Meningitis: Preliminary Survey Based on 113 Cases. H. S. Banks.—p. 7.
Sulfanilamide Content of Cerebrospinal Fluid: During Treatment of Meningococcic Meningitis. E. N. Allott.—p. 13.
Treatment of Pneumonia with 2-(*p*-Aminobenzenesulfonamido) Pyridine. G. M. Evans and W. F. Gaisford.—p. 14.
Rupture of Cesarean Scar Treated by Simple Drainage and Followed by Pregnancy. H. Arthure.—p. 19.

Serum and Sulfanilamide in Meningitis.—Banks reviews three groups of cases of meningococcic meningitis: (1) thirty-eight acute cases treated with serum (meningococcus antitoxin) intensively by the venous, lumbar, cisternal and occasionally ventricular routes (from December 1933 to April 1937), (2) fifty-nine acute cases treated with intravenous serum and sulfanilamide by mouth (from May 1937 to May 1938) and sixteen acute cases treated exclusively with sulfanilamide by mouth (from April to June 1938). The fatality rate during the first five days in the first group was 16 per cent. There were no infants in this series. The cerebrospinal fluid was usually sterile within twenty-four to forty-eight hours, but in about a fifth of the cases meningococci were present for four or five days, or occasionally longer. In the fifty-nine cases including ten infants treated with both serum and sulfanilamide, the fatality rate was 11.8 per cent. Recovery was rapid and the nursing relatively easy, the cerebrospinal fluid being usually sterile within twenty-four hours. The few exceptions to this rule, as well as two of the seven deaths, could be explained on the basis of low dosage of sulfanilamide. In the sixteen selected cases treated with sulfanilamide alone there were fifteen rapid recoveries. Sulfanilamide therapy has changed the treatment of meningococcic meningitis from a difficult to a relatively simple matter. The former high case mortality in infants appears to be yielding to this treatment. High initial dosage is advocated. The sulfanilamide level in the cerebrospinal fluid should preferably reach 5 mg. per hundred cubic centimeters in twenty-four hours and be maintained at this level for three days. Early cyanosis is not an indication for reducing the dosage. The treatment is probably effective only in the acute stage. Two patients treated after the tenth day of the disease died. Experimental and clinical evidence so far is in favor of combined serum and drug therapy, especially in severe cases.

Practitioner, London

141: 1-116 (July) 1938

Psychologic Diagnosis and Treatment in General Practice. T. A. Ross.—p. 1.
Treatment of Anxiety States. R. D. Gillespie.—p. 10.
Diagnosis and Treatment of Obsessional States. A. Lewis.—p. 21.
Common Forms of Hysteria and Their Treatment. S. B. Hall.—p. 31.
Suicide. S. Smith.—p. 41.
Home versus Institutional Treatment of Neuroses and Psychoses. N. Harris.—p. 53.
Behavior Problems of Children and Their Treatment. Grace Calver.—p. 61.
Corns and Callosities. N. C. Lake.—p. 69.
Modern Practice in Relation to Infectious Diseases and Disinfection. H. Paul.—p. 79.
Illumination and Vision. R. J. Lythgoe.—p. 89.
Diet in Health and Disease: XIII. Diet in Allergic Diseases. G. W. Bray.—p. 97.

Tubercle, London

19: 433-480 (July) 1938

Old Tuberculin and Purified Tuberculin: Standardization: Preparation of Stable Solutions: Part II. Purified Tuberculin. K. A. Jensen, G. Bindslev, S. Möller, A. Hansen and P. Lind.—p. 433.
*Experimental Studies on Treatment of Pleural Affections by Counterirritants (Dermatopulmonary Reaction). S. Puder.—p. 448.
Tuberculosis in British Guiana. E. Cochrane.—p. 453.
Preparation of Tuberculin Ointment of Constant Strength. K. A. Jensen.—p. 467.

Counterirritants in Pleural Disorders.—Working on the assumption that the counterirritant applied to the skin caused an inflammatory process in the subcutaneous tissue and in the parietal pleura whereby the reticulo-endothelial cells would undergo an increase in number, Puder sought to demonstrate the increase of these cells by means of an intravenous injection of an electronegative, i. e. an acid, dye which would become stored in the reticulo-endothelial cells. The experiments were performed on four rabbits. The rabbit treated with mustard paper showed no distinct microscopic changes. In the second animal the area of skin treated with potassium iodide ointment containing free iodine showed ulceration and demarcation of the ulcer; the parietal pleura showed some imbibition. In the rabbit treated with tincture of iodine the skin as well as the deeper tissues and the pleura were stained a deep blue, which was less marked on the control side. There was also found in the skin an exogenous pigment probably due to the iodine. The parietal layer of the pleura was saturated with serum, the right lung showed signs of congestion and there was moderate hyperemia under the visceral layer of the pleura. The macroscopically visible changes resulting from the application of a mixture of lactic acid, orthophosphoric acid and volatile acids dissolved in alcohol and glycerin correspond to those in the rabbit treated with iodine, except for the loss of cutaneous epithelium caused by the application. Microscopic examination showed changes in the skin, hyperemia of the subpleural parts of the lung and transudation of serum into the parenchyma of the lung. From the experiments it is deduced that certain substances applied to the skin of the chest may lead to hyperemia, transudation and venous congestion in the visceral pleura and even in the lung parenchyma of the side to which they have been applied.

Archives des Maladies du Cœur, Paris

31: 569-668 (June) 1938

Permanent Shortening of PR Interval in Electrocardiogram Without Deformation of Ventricular Complex. A. Clerc, R. Lévy and C. Cristesco.—p. 569.
*Phrenogastric Syndrome of Coronaritis. C. Laubry, P. Soulié and R. Heim de Balsac.—p. 583.
Study of Case of Total Thyroidectomy for Decompensated Cardiopathy with Documents Regarding Cardiac Repercussions of Myxedema. R. Froment and M. Jeune.—p. 593.
Roentgenologic Aspects of Azygos Vein in Course of Cardiac Insufficiency. H. Durieu and J. Lequime.—p. 609.
Transitory Auriculoventricular Dissociation with Deformation of Ventricular Waves Manifesting an Oscillating Block of the Right and Left Branches of the Bundle of His. E. Ledoux.—p. 618.

Phrenogastric Syndrome of Coronaritis.—Laubry and his associates report five cases of the phrenogastric syndrome of coronary origin. In some patients who present either the antecedents of acute coronary thrombosis or the characteristic electrocardiographic changes of a coronary lesion there develops an elevation of the left side of the diaphragm, frequently in association with an aerogastria or an aerogastrocoly. The elevation may be moderate, that is, the left half of the diaphragm may be lifted simply to the elevel of the right half; in other cases, however, the elevation is so great that the roentgenologic aspect is identical with that after phrenicectomy on the left side. In most but not in all cases, the diaphragmatic elevation seems to be accompanied by modifications in the gastric morphology; the stomach may present an abnormal gaseous distention or, when the diaphragmatic elevation is great, a folding of the small curvature may result. The clinical diagnosis of the phrenogastric syndrome of coronary origin is made in various ways. In some patients the coronary thrombosis is known and the aerogastria is diagnosed secondarily at the time of a roentgenologic examination; in other patients it is the roentgenologic detection of aerogastria which suggests a coronaritis, the latter being then affirmed by the electrocardiogram. To explain the phrenogastric syndrome of coronary origin, the authors suggest several hypotheses. The phrenogastric symptoms may be of the nature of a reflex to the irritative factor of the coronary lesion. Moreover, the coronaritis may elicit the changes by way of the left phrenic nerve, which is in contact with the pericardium. The authors regard as most important the role of the irritation of the pericardium, mediastinal pleura and diaphragm. They show that grave prognostic errors can be avoided if, in the presence of diaphragmatic elevation, accompanied by gaseous distention of the stomach, a search is made for signs of coronary lesions and the patient is subjected to systematic electrocardiography.

Presse Médicale, Paris

46: 1113-1128 (July 16) 1938

*Comparison of Treatments (Serum, Azo Compound, Sulfanilamide) of Cerebrospinal Meningitis in Rural Colonial Regions. G. Muraz, H. Chirle and A. Quéguiner.—p. 1113.
Massive Atelectasis in Course of Primary Pseudomembranous Bronchitis. J. Rakower.—p. 1116.

Treatment of Cerebrospinal Meningitis.—Muraz and his associates report their experience in the treatment of cerebrospinal meningitis in epidemics that occurred in French Nigeria. Of forty-seven patients who were treated with serum, thirty-seven were cured. They report four cases treated with the chrysoidin derivative rubiazol by mouth as well as intramuscularly. Of the four patients, two were cured. The authors describe their experiences with para-amino-phenyl-sulfanilamide (lysococcine) administered by mouth or intraspinally. During the first two days as many as sixteen tablets (four times four) were given daily (each tablet 0.3). During the following six or ten days, about half of that dose was administered (four times daily two tablets). The average number of tablets given to adults in the course of the entire treatment was 100. They emphasize the simplicity of the oral administration of the sulfanilamide preparation and say that this treatment reduced the mortality to 16.39 per cent; that is, the mortality was less than in serotherapy. They stress that sulfanilamide treatment is much less expensive than serotherapy. The combination of serotherapy with oral sulfanilamide treatment, which was employed by other investigators in twenty-three cases, resulted in cure in twenty-one of them.

Revue Belge des Sciences Médicales, Louvain

10: 177-308 (April) 1938

Clinical Significance of Serous Iron. F. Van Goidsenhoven, J. Hoet and J. Lederer.—p. 177.
*Achresthic Anemia. J. F. Wilkinson.—p. 191.
*Acute Erythremia. G. Di Guglielmo.—p. 200.
Clinical Aspects and Pathogenesis of Familial Chronic Erythremia, Type Cooley. L. Pontoni.—p. 216.
Thrombophlebitis Splenomegaly. C. Frugoni.—p. 227.
Banti's Disease: Evolution and Present Status of Problem. E. Greppi.—p. 237.

Achresthic Anemia.—Wilkinson says that a megalocytic hyperchromic anemia may exist in conditions other than pernicious anemia. In earlier reports (1935, 1936) he, together with Israels, described eight cases to which they applied the term "achresthic anemia." The patients have dyspnea, palpitation and fatigue but there is no appreciable loss of weight. In contradistinction to the lemon-yellow color of the skin in pernicious anemia, the skin of these patients is rather a brownish yellow. There is no history of lingual sensitivity or ulceration, of poor digestion, of flatulence and of intestinal disturbances, and there are no neurologic or hemorrhagic symptoms. There may be an increase in the size of the liver and spleen; cardiac murmurs and an increase in the size of the heart may also occur. The gastric secretion is practically normal. The examination of the blood reveals a hyperchromic megalocytic anemia, generally grave (from 1 to 2 million erythrocytes), with an increased color index and with a variable degree of anisocytosis and poikilocytosis. The course of achresthic anemia is chronic; treatment may prolong life by months or as much as two years, but the patient never regains his health completely. Injection of liver extract should be tried, because it will furnish diagnostic information, but the doses must be larger than in pernicious anemia. It is preferable to divide the doses; treatment by depots is not indicated in achresthic anemia. If no reticulocytosis is produced or if there is only a slight increase in the number of erythrocytes, blood transfusions must be repeated until an adequate red cell count is attained. Maintenance treatment must always be energetic and should consist in injections of liver extracts (from 4 to 8 cc. weekly or more) or in the administration of desiccated stomach preparations in doses of 30 Gm. a day. When relapses occur, blood transfusions must be repeated; their effect is only temporary and as the disorder progresses they seem to become less effective. Splenectomy is contraindicated in achresthic anemia. The author says that achresthic anemia seems to be a primary disorder. It has not been possible to trace it to a hemolytic poison, to a toxemia or to another factor. Studies revealed a strong hyperplasia of the hematopoietic organs with a megaloblastic predominance. The author suggests that in achresthic anemia the hematopoietic tissues are incapable of assimilating the antipernicious factor that is present in the depots of the organism.

Acute Erythremic Myelosis.—According to Di Guglielmo, acute erythremic myelosis (acute erythremia) is a disease with well defined clinical and histopathologic aspects. He lists the following as the characteristic aspects: (1) a grave anemic state from the beginning of the disease, (2) irregular fever or more often remittent fever, (3) splenomegaly, which is nearly always considerable, (4) hepatomegaly, which is nearly always less severe than the splenomegaly, (5) acute evolution, the disease lasting generally from one to two months and always having a fatal outcome, (6) the presence of a larger or smaller number of mostly basophilic erythroblasts in the peripheral blood, (7) primary hyperplasia of the erythropoietic tissue with arrest of the maturation in the primary phases of cellular evolution, and (8) proliferation of the elements of the reticulo-endothelial system. In the typical cases these symptoms are always faithfully reproduced, but this disease like other morbid processes appears also in incomplete and atypical forms. The diagnosis is comparatively easy. The etiology is completely unknown. The mode of onset, the development and the clinical aspects suggest an acute infectious process, but all investigations (serologic tests, hemocultures, inoculations of necroptic material into various mediums and so on) have given negative results. The disease occurs in both sexes and in all ages. The prognosis is unfavorable. All the typical cases described so far failed to respond to treatment with liver, arsenic, iron or blood transfusion and all ended in death.

Schweizerische Medizinische Wochenschrift, Basel

68: 881-900 (July 23) 1938. Partial Index

Adaptability of Healthy and Diseased Persons. P. H. Rossier.—p. 881.
Rheumatism and Sympathicus. H. Iselin.—p. 884.
Combined Photoprotective Action of Oil of Bergamot and Vitamin C. G. Miescher.—p. 888.
Exophthalmic Goiter: Experimental Study with Regard to Pathology of the Disease. F. Blum.—p. 889.
*Serous Meningitis in Pfeiffer's Glandular Fever. W. Huber.—p. 892.

Serous Meningitis in Pfeiffer's Glandular Fever.—Huber says that the combination of Pfeiffer's glandular fever with meningeal symptoms cannot be regarded as rare, for of ten patients with glandular fever observed at his clinic three had a noticable meningism. Lumbar puncture disclosed in two of these three cases pathologic aspects of the cerebrospinal fluid of a nature indicating a lymphocytic meningism. In the third case the cell count of the cerebrospinal fluid was at the limit of normality but there were no other changes. Five other patients with glandular fever but without signs of meningism were subjected to spinal puncture; in three of these the pressure of the cerebrospinal fluid was found increased; in two the cell count was increased and in two pathologic protein curves were detected. These changes in the cerebrospinal fluid without clinical signs of meningitis are of interest because they indicate a high incidence of involvement of the meninges in Pfeiffer's glandular fever. This meningeal involvement is probably due to a great affinity of the still unknown causal agent for the central nervous system. The author states further that, whereas two of his three patients with glandular fever and meningism presented the typical signs, the third case illustrates with what severity the meningeal symptoms may appear in glandular fever. He gives a detailed clinical history of this case. He further directs attention to the great variations in the symptomatology of glandular fever, pointing out that some of the symptoms may be severe or moderate or even entirely absent. However, in order to arrive at the diagnosis it is usually considered that the following should be present: febrile course, involvement of the lymphatic apparatus and the characteristic blood picture; the latter is regarded as the most important for the diagnosis. The blood picture of glandular fever is characterized not by a simple lymphocytosis but rather by qualitative changes in the lymphatic elements.

Pediatria, Naples

46: 573-668 (July 1) 1938

*Bacteriologic Etiology of Bronchopneumonia in Infants. A. Pouché.—p. 573.
Watherhouse and Friderichsen's Syndrome: Clinical and Anatomohistologic Study. I. Biddau.—p. 598.
Considerations on Infant Mortality in Hospitals. E. Zecca.—p. 621.
Intestinal Hemorrhage in Course of Pneumonia: Case. T. Aversa.—p. 628.
Benign Lymphocytic Acute Meningitis with Blood Mononucleosis: Case. F. Cislaghi.—p. 637.

Bronchopneumonia in Infants.—Pouché made bacteriologic studies on sixty infants suffering from primary bronchopneumonia. Cultures were done with the pharyngotracheal secretions and with the material taken from the lung or the pleural cavity by puncture, either during life or immediately after death. Hemocultures were also made. In some cases any of the foregoing procedures was repeated or cultures with two different materials were done. Several bacteria, especially pneumococci of type IV and hemolytic streptococci were identified. The author found that cultures with the pharyngotracheal secretion are of scanty diagnostic etiologic value. Noncausal bacteria frequently appear in the cultures. Hemocultures are also of scanty diagnostic value. Cultures from lung or pleural material showed in all but one of the author's cases pneumococci of type IV and hemolytic streptococci. The former was predominant in the cases which evoluted to recovery whereas the latter was predominant in the cases which ended in death of the patient. According to the author the disagreement of authors in the literature as to the etiology of primary bronchopneumonia in infants depends on the various methods used in the bacteriologic researches. The disease is caused by pneumococci of type IV. Pneumococcus antiserums do not control the disease because of the fact that up till now they have been prepared with pneumococci of types I, II and III, which are not the etiologic agents.

Riforma Medica, Naples

54: 1073-1108 (July 16) 1938

*Ulcers and Gastroduodenitis in Splenohepatic Congestive Inflammation: Cases. E. Greppi and A. Forconi.—p. 1075.
Vascular Alterations in Buerger's Disease. C. Mastrosimone.—p. 1078.
Briançon's Symptom in Diagnosis of Echinococcus Cysts. E. Cicchitto.—p. 1083.

Ulcer and Gastroduodenitis in Splenomegaly.—According to Greppi and Forconi, gastric, duodenal and gastroduodenal inflammation and passive congestion associated with similar conditions of the spleen and the liver show an early phase of gastric, duodenal or gastroduodenal ulcer. The condition is frequent in man. The lesions predominate in the duodenum, rarely in the stomach. The clinical symptoms vary from mild to grave digestive disturbances. In certain cases there is either gastralgia or the complete syndrome of gastric or gastroduodenal ulcer. In all cases the chemistry of the gastric secretion is altered and there is a tendency to the production of local hemorrhages. Roentgen examination of the gastrointestinal tract shows the various evolutional phases of gastric or gastroduodenal ulcer from simple duodenitis to typical ulcer. The authors report nine such cases. Roentgen examination of the gastrointestinal tract showed simple or erosive duodenitis in seven cases, phlogosis of the stomach and cardias with perivisceritis in one case and a chronic ulcer of the lesser curvature of the stomach with perivisceritis in another. In all cases the clinical symptoms corresponded to the evolutional phase of the ulcer. In one case the repeated examination of the gastrointestinal tract showed simple duodenitis, which evoluted to erosive duodenitis with formation of punctiform niches in four months. In another case, roentgen examination showed the regressive evolution of a small juxtapyloric ulcer to diffuse gastroduodenitis in the course of four months of medical treatment. The authors believe that inflammation and passive congestion of the spleen alone or in association with similar conditions of the liver are due to local disturbances of the preportal circulation. The condition results in the establishment of a special form of diffusing and progressive inflammation and local passive hyperemia, which induces the development and evolution of gastric, duodenal or gastroduodenal ulcers.

Endokrinologie, Leipzig

20: 223-304 (July) 1938

Amount of Gonadotropic Substance in Adrenal Cortex in Different Species of Animals. F. Hoffmann.—p. 223.
*Some Endocrine Influences on Fat Metabolism of Culture of Human Leukocytes. G. Wallbach.—p. 230.
Treatment of Adiposogenital Dystrophy. A. Margitay-Becht.—p. 241.

Endocrine Influences on Fat Metabolism of Leukocytes.—Wallbach says that in earlier studies he was able to show that the fat metabolism can be observed on the culture of human leukocytes. Even under normal conditions, staining with sudan III will reveal the depositing of fat in the human leukocytes undergoing growth and differentiation in cultures. The author thinks that these fat deposits can probably be explained by infiltrative processes of the plasma lipoids and by the splitting off of lipoids from lipoid-protein compounds. The fat metabolism undergoes fundamental changes when lipoids are added to the culture medium. However, there is not necessarily an increase in the fat deposits following the addition of certain lipoids. Rather there is evidence that the culture of leukocytes has a certain autoregulation as regards its lipoid metabolism, because some fats, such as liquid petrolatum or milk, cause a reduction in the fat deposits of the growing human leukocytes. Such manifestations seem to suggest that not only the lipoids but also stimulating substances contained in them play a part in the absorption of fat by the leukocytes. The aim of the investigations described in this report was to determine the influence exerted by some endocrine and chemical substances on the fat metabolism of cultures of human leukocytes. The author experimented with some preparations of the thyroid, of the testes, of the pancreas, of the adrenals and of the hypophysis; also with sodium taurocholate, pepper

and phlorhizin. Contrary to expectations, the addition of thyroxine to the culture did not cause a reduction in the lipoid deposits but rather a tremendous increase. Insulin was found to cause finely granulated fat deposits in the cells during the first five days. During the later stages of cultivation, considerable fat deposits could be observed in the macrophages and fibroblasts. Hypophysin produced a great increase in the lipoid deposits. Epinephrine produced finely granulated fat deposits during the first five days of the culture; on the sixth day the increase in fat deposits was especially great, but after that the fat deposits disappeared temporarily. In the presence of an extract of the testes the cellular fat deposits were moderate on the first day; during the following five days there was slight increase, but in the end all fat deposits had disappeared. Phlorhizin was found to cause a temporary but pronounced increase in fat deposits. Bile caused at first moderate deposits, then a great increase, but finally there was a consumption of intracellular fat. Pepper caused a disappearance of the fat deposits. The author further reports how the simultaneous addition of lipoids and glandular products or other stimulating substances acts on the intracellular fat metabolism. He found that the same glandular preparations and stimulating substances may differ in their effects on the fat metabolism, depending on the lipoids that were administered simultaneously. Regarding the significance of these observations, the author says that an increase in fat deposits does not necessarily indicate an increased fat metabolism. Under certain conditions the absence of fat deposits may indicate an especially active metabolism.

Klinische Wochenschrift, Berlin

17: 993-1032 (July 16) 1938. Partial Index

Tendency to Obesity in Patients with Silicosis. G. Schlomka, K. Naumann and A. Bechstein.—p. 999.
Studies on Pathogenesis of Muscular Dystrophy. K. Kuré and K. Ohshima.—p. 1003.
Modification of Vital Capacity of Lung by Hindering Venous Discharge from Extremities. G. Budelmann.—p. 1009.
*Pathologic Aspects of Electrocardiogram Made After Work Tests in Children. P. Laurentius.—p. 1011.
Production of Ascorbic Acid Deficiency in Living Animals by Intravenous Injection of Colloidal Silver Chloride. T. Bersin, S. Raabe and H. J. Lauber.—p. 1014.
Dietetic Treatment of Obesity. R. Boller.—p. 1018.

Electrocardiographic Tests on Children.—Laurentius says that in children the early recognition of latent cardiac defects is of especial importance. Children develop cardiac defects chiefly during diphtheria and during acute rheumatic polyarthritis. During the acute stages of these disorders the diagnosis of the cardiac defects is usually simple, but later the estimation of the functional capacity of the heart may cause considerable difficulties. In this paper the author reports electrocardiographic studies on forty-four children. Of these thirty had had a diphtheric myocarditis, twelve had had a rheumatic polyarthritis and two had congenital cardiac defects. Each child was subjected to three electrocardiographic tests: one was made while the child was at rest, one immediately after physical exertion and one three minutes after exertion. It was found that the electrocardiogram made after exertion is a valuable aid in the functional examination of the heart in that it often permits the recognition of latent cardiac defects. Summarizing his observations in the course of the electrocardiographic tests, the author says that he observed wandering of the origin of the impulse, occurrence of intra-auricular conduction disturbances, partial retardation of the conduction between auricle and ventricle, frequent appearance of extrasystoles and signs of myocardial impairment. His investigations showed that although the electrocardiographic record made while the child is at rest is normal and clinical signs are absent, there are nevertheless a certain number of children in whom the electrocardiogram that is made after exertion will reveal pathologic changes. From these observations he concludes that all children who have had a diphtheric myocarditis should be protected against exertions for a time so as to avoid undesirable complications. In apparently compensated valvular lesions after articular rheumatism, disturbances are also often detected in the electrocardiogram that is taken after exertion. These children likewise should be protected against exertion. Strenuous gymnastics and sports and similar exertions should be avoided for a time. Only after all pathologic signs have subsided may the children be permitted a gradually increasing amount of exertion.

Münchener medizinische Wochenschrift, Munich

85: 1057-1096 (July 15) 1938. Partial Index

Bullous Dermatitis Observed in Harvesting Workers. W. Krantz.—p. 1057.
*Menstrual Disturbances in Genital Infantilism and Remarks on Incidence of Hypoplasia Among Patients of Women's Clinic of Tübingen. K. Klöppner.—p. 1060.
*Isolated Thrombopenia Caused by Chronic Benzene Poisoning. B. Kern.—p. 1062.
In What Stage Should Carcinoma of the Cervix Uteri Be Clinically Diagnosed? H. Hinselmann.—p. 1071.
Extension of Disease Process in Central Nervous System in Heine-Medin's Disease. G. Peters.—p. 1073.
Necessity of Repeated Roentgen Examinations in Case of Late Manifestations of Tuberculous, Bronchogenic Dissemination. H. Bartsch and S. Zollner.—p. 1078.

Menstrual Disturbances in Genital Infantilism.—Klöppner reports observations on 190 women with genital hypoplasia and disturbances in the menstrual cycle. These 190 cases were observed among 510 women with genital hypoplasia. With the exception of thirteen cases in which there existed only a hypoplasia of the uterus, the genital infantilism was generally characterized by a low perineum, hypoplasia of the labia, narrow vagina, low vaginal vault, small uterine cervix and body, high position of the ovaries and small parametrium. The author observed also that genital infantilism is not restricted to certain structural types. It was found in persons with various bodily builds, but it seemed especially frequent in the somewhat masculine types. Regarding the incidence of genital infantilism, he says that in the years 1929-1933 it was almost twice as high as in the years 1907-1918. He thinks that the deficient nutrition during the war years is probably the chief cause of this increase, for the condition is especially frequent among the women who at the time of the insufficient nutrition were in the stage of their first sexual development. However, this deficient nutrition is not the only cause. Among the author's material there was evidence that considerable inbreeding might be an important factor in genital infantilism. Discussing the menstrual disturbances in the women with genital hypoplasia, he says that they occurred in 37 per cent (190 of 510). Among these 190 cases there were ten of primary amenorrhea, twenty-nine of secondary amenorrhea, twenty-two of hypomenorrhea, thirty-two of oligohypomenorrhea, twenty-four of menorrhagia and seventy-three of metrorrhagia. In view of the fact that a late menarche was formerly regarded as one of the characteristics of genital infantilism, it seems surprising that thirty-six of these 190 patients had a relatively early menarche and that 103 had a normal menarche. Of the ten patients with primary amenorrhea, eight had a rudimentary uterus and six had signs of a generalized infantilism. In the women with secondary amenorrhea the anamnesis often revealed a late menarche. Painful menstruation was complained of by 141 of the women. The author thinks that in order to determine the nature of the menstrual disturbance a microscopic examination of the endometrium is essential; in the material that is discussed in this paper, curettage was done in 128 cases. After giving tabular reports of the results of these examinations, he discusses endocrine therapy of the menstrual disturbances concurring with genital hypoplasia. He thinks that, in cases of hypomenorrhea and oligomenorrhea, estrogen may at first be tried alone. However, he warns against the indiscriminate use of estrogen in all cases of genital hypoplasia with menstrual disturbances, pointing out that in cases of cystic glandular hyperplasia progestin is required and that in cases of amenorrhea both progestin and estrogen have to be given.

Thrombopenia in Benzene Poisoning.—Kern says that impairment of the hematopoietic organs is one of the symptoms of chronic benzene poisoning. However, there is not always a uniform impairment of the various functions of the bone marrow. Impairment of the leukopoiesis seems to be most frequent, but anemias with considerable inhibition of the erythropoiesis have likewise been observed in a number of cases, and reductions in the number of thrombocytes with a tendency to hemorrhages has been noted in some cases. The impairment of all functions of the bone marrow is comparatively rare in human subjects; it occurs only in the severest cases. It is difficult to estimate

the incidence of thrombopenias in benzene poisoning, because in many of the cases reported in the literature a counting of the thrombocytes had been neglected. However, hemorrhages and scurvy-like symptoms dominated the clinical picture in many cases of chronic benzene poisoning, and investigators who did take a thrombocyte count often discovered thrombopenias. In none of the cases previously reported was a severe thrombopenia the only manifestation of an impairment of the bone marrow, and so the author feels justified in reporting the history of such a case. The patient, a farmer aged 58, had benzene poisoning while working with a defective benzene motor in an insufficiently ventilated building. Study of the blood picture revealed that the thrombocytes decreased to zero and then increased again above the normal level. The thrombopenia was accompanied neither by leukopenia nor by anemia. The case is noteworthy also because of the involvement of the central nervous system in the form of a bilateral spastic paralysis of the arms and legs and somnolence. The author thinks that the paralytic symptoms were probably the result of multiple hemorrhages into the central nervous system; the fact that the paralytic symptoms appeared at the time when the hemorrhagic diathesis was in its severest stage, and the observation that the nervous disturbances subsided and the cutaneous hemorrhages disappeared after the thrombocytes had reached a normal level again, seem to corroborate this. After the paralytic symptoms subsided sciatica developed, but this too subsided again after several weeks.

Zeitschrift f. menschliche Vererbungslehre, Berlin

22: 1-128 (July 4) 1938

School Work and Psychic Constitutional Type. W. Kramaschke.—p. 1.
Can Constitution Be Changed by Premature Birth? T. Brander.—p. 50.
Alcohol and Offspring. T. Brander.—p. 61.
*Essential Hypertension in Uniovular Twins, Aged 23. E. Klemola.—p. 69.
Pneumonia in Twins. E.-G. Becker.—p. 77.
Electrocardiogram in Twins. G. W. Parade and W. Lehmann.—p. 96.
*Excess Mortality of Boys as Result of Recessive Sex-Linked Hereditary Factors. F. H. Haase.—p. 105.

Hypertension in Uniovular Twins.—Klemola reports the discovery of essential hypertension in twin sisters aged 23. He thinks that the case is noteworthy not only because essential hypertension is rare at such an early age but also because no such case has as yet been reported in twins. After reporting the clinical histories of the twin sisters, he cites factors which indicate that the twins were enzygotic. Then he discusses the role of heredity in essential hypertension in the light of research on twins. In this connection he cites authors who demonstrated in studies on twins that the blood pressure values of uniovular twins have a greater similarity than have those of binovular twins. In the twins whose histories are reported, the essential hypertension was discovered in 1934, when they were 23 years of age, but it is probable that they had had it several years before. Moreover, they have been under observation during the four years since 1934 and the blood pressure has remained uniformly elevated in recent times (160-210 mm. of mercury). It is noteworthy that roentgenoscopy has failed to disclose a hypertrophy of the heart, but this absence of cardiac hypertrophy has been noted by others in young persons with essential hypertension. On the other hand, electrocardiography disclosed signs of myocardial defects, probably the results of attacks of myocarditis, which may have concurred with the repeated attacks of angina, to which the twins had been subject. By means of the work test, considerable changes could be elicited in the electrocardiogram which were identical with those in coronary insufficiency. The family history of the twins indicates that this was a case of recessive transmission of hypertension.

Excess Mortality in Boys.—Haase reports statistical studies on the excess of the mortality in boys over that of the mortality in nurslings in general. Previous to the decade covered by his statistics, such studies had been carried on by Lenz and later by Schirmer. Haase observed the same relations between the figures as had those investigators. He shows tables which indicate that the mortality of nurslings has decreased in all countries in recent decades but that the excess mortality of boys has increased everywhere. A comparison of the statistical reports of different countries reveals that a high excess mortality for boys corresponds to a low nursling mortality and vice versa. Moreover, if different years are compared it can be seen that according as the excess mortality of boys is the lower, the higher is the nursling mortality and vice versa. The author says that his observations are a further corroboration of the theory suggested by Lenz, that the excess mortality of boys is chiefly the result of recessive, sex-linked hereditary factors. As is explained by Lenz, such hereditary factors do not have to be frequent to result in an excess mortality of boys. For instance, if it is assumed that the X chromosome of human subjects contains 250 hereditary units, this signifies an excess mortality of 2.5 for 100 if one of every 10,000 units is recessively lethal. Recently Lenz further amplified his theory, stating that the suspected pathologic hereditary factors may be stable or unstable as regards the environment. If most of them are stable in this respect, a high excess mortality for boys must be expected in the presence of a low nursling mortality because, if the mortality of nurslings is low, the fatalities that do occur are chiefly caused by internal, hereditary causes; that is, the excess mortality of boys must become especially noticeable. In addition to the theory of Lenz, the author also cites views and observations of von Pfaundler, Landauer and Rietz. He shows that Landauer's objection to the theory of Lenz is not tenable.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

82: 3303-3410 (July 2) 1938. Partial Index

Syndrome of Hanot. G. A. Kreuzwendedich von dem Borne.—p. 3307.
Juxta-Articular Nodosities: Several Cases. W. L. L. Carol and J. R. Prakken.—p. 3315.
*Treatment of Postencephalitic Parkinsonism. J. C. Broekema.—p. 3323.
Malaria Therapy of Dementia Paralytica. C. van der Heide.—p. 3331.
Habitual Dislocation of Patella. B. C. C. Wösten.—p. 3337.

Treatment of Postencephalitic Parkinsonism.—Broekema first describes the observations he made in Penegrossi's clinic in Rome, pointing out that at this and several other Italian clinics postencephalitic parkinsonism is treated with an extract of the root and the rootstock of Atropa belladonna. The extract has an alkaloid content of 0.02 per cent and is prepared from plants that have an especially high alkaloid content. After describing how the extract is prepared, the author discusses the mode of administration. At the onset of the treatment the doses are small; that is, from 1 to 2 cc. is given. Gradually the quantities are increased. The optimal doses vary greatly (between 6 and 300 cc. a day). The average daily dose for women is from 60 to 90 cc., for men from 60 to 120 cc. The larger doses are fractionated, the largest quantity being given in the evening, so that the headaches likely to result from medication with the belladonna extract will concur with the period of sleep. In the beginning of the treatment it may also be desirable to give the extract by clysma; this form of administration has the same effect as the oral one. Complete intolerance for the extract is extremely rare. During the treatment the patients should abstain from smoking, alcohol and coffee. The diet should be chiefly vegetarian. Moderate exercise in open air, massage, gymnastics, psychotherapy to overcome the depression and work therapy have to be combined with the belladonna therapy. After giving a summary report about the results obtained with this treatment in 1,346 cases in Rome, the author gives detailed clinical histories of four patients treated by him. He shows that the improvement appears in some patients sooner than in others. All his patients had previously been treated unsuccessfully with other measures. The author hopes that this treatment will find a more general application in the Netherlands.

CORRECTION

Myelomatosis.—In the abstract from *Hospitalstidende*, Copenhagen, entitled "Myelomatosis," published on page 760 of the August 20 issue of The Journal, the sentence which read "In the two cases of hyperproteinemia and hyperglobulinemia and hypoglobulinemia there was abundant Bence Jones protein in the urine" should have been as follows: "In the two cases with hyperproteinemia and hyperglobulinemia the urine did not contain Bence Jones protein; in the other two cases, with hypoproteinemia and hypoglobulinemia, there was abundant Bence Jones protein in the urine."